

# 425 GRAND CONCOURSE

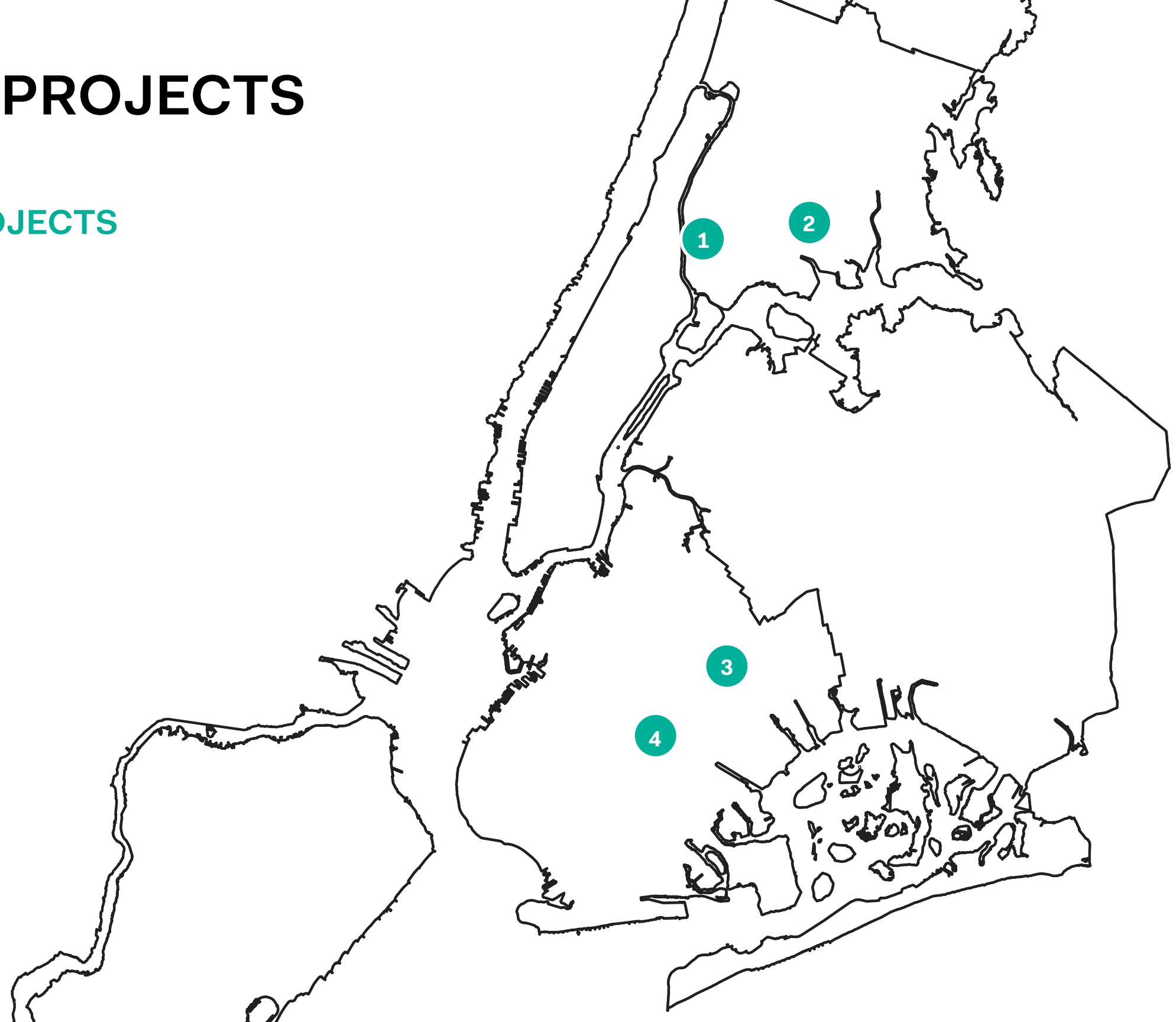


**DattnerArchitects**

# PASSIVE HOUSE PROJECTS

## DATTNER ARCHITECTS PROJECTS

1. 425 Grand Concourse
2. 1675 Westchester Avenue
3. Chestnut Commons
4. Vital Brookdale



# PASSIVE HOUSE EXAMPLE PROJECTS

Dattner Architects

## 425 GRAND CONCOURSE

300,000 sf | 277 units | 27 floors



- Cast-in-Place Concrete
- PH System: PHIUS
- VRF: 3 Pipe
- ERV: Centralized
- Field-built metal panels
- EUI: 22.4 kBTU/SF/YR

## 1675 WESTCHESTER AVENUE

256,000 sf | 249 units | 12 floors



- Bearing Wall/Block & Plank
- PH System: PHIUS
- VRF: 2 Pipe
- ERV: Centralized
- Brick on CMU backup wall
- EUI: 21.6 kBTU/SF/YR

## CHESTNUT COMMONS

300,000 sf | 275 units | 14 floors



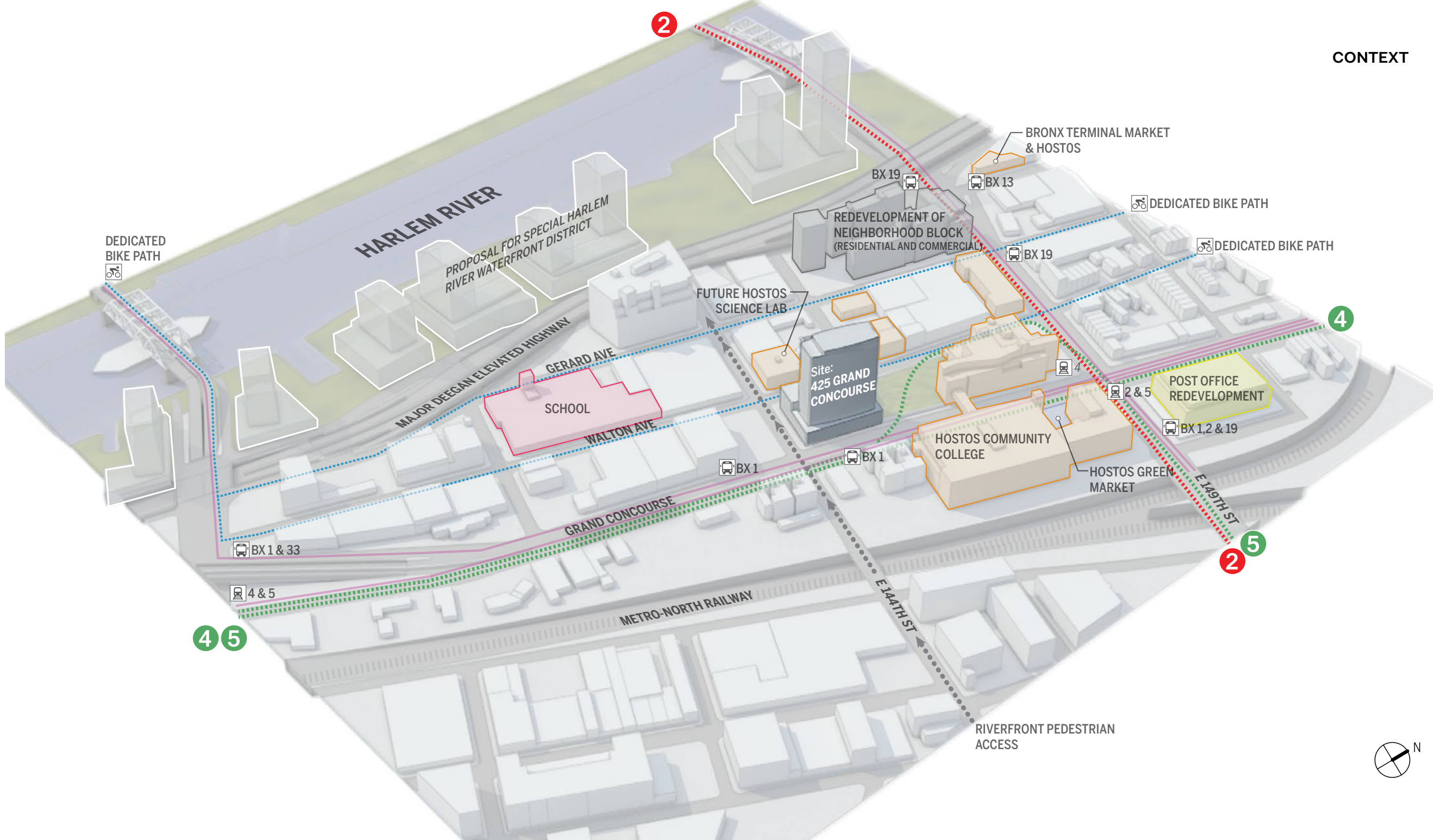
- Cast-in-Place Concrete
- PH System: PHIUS
- VRF: 2 Pipe
- ERV: Centralized
- Brick/EIFS on metal stud backup wall
- EUI: 21.14 kBTU/SF/YR

# 425 GRAND CONCOURSE

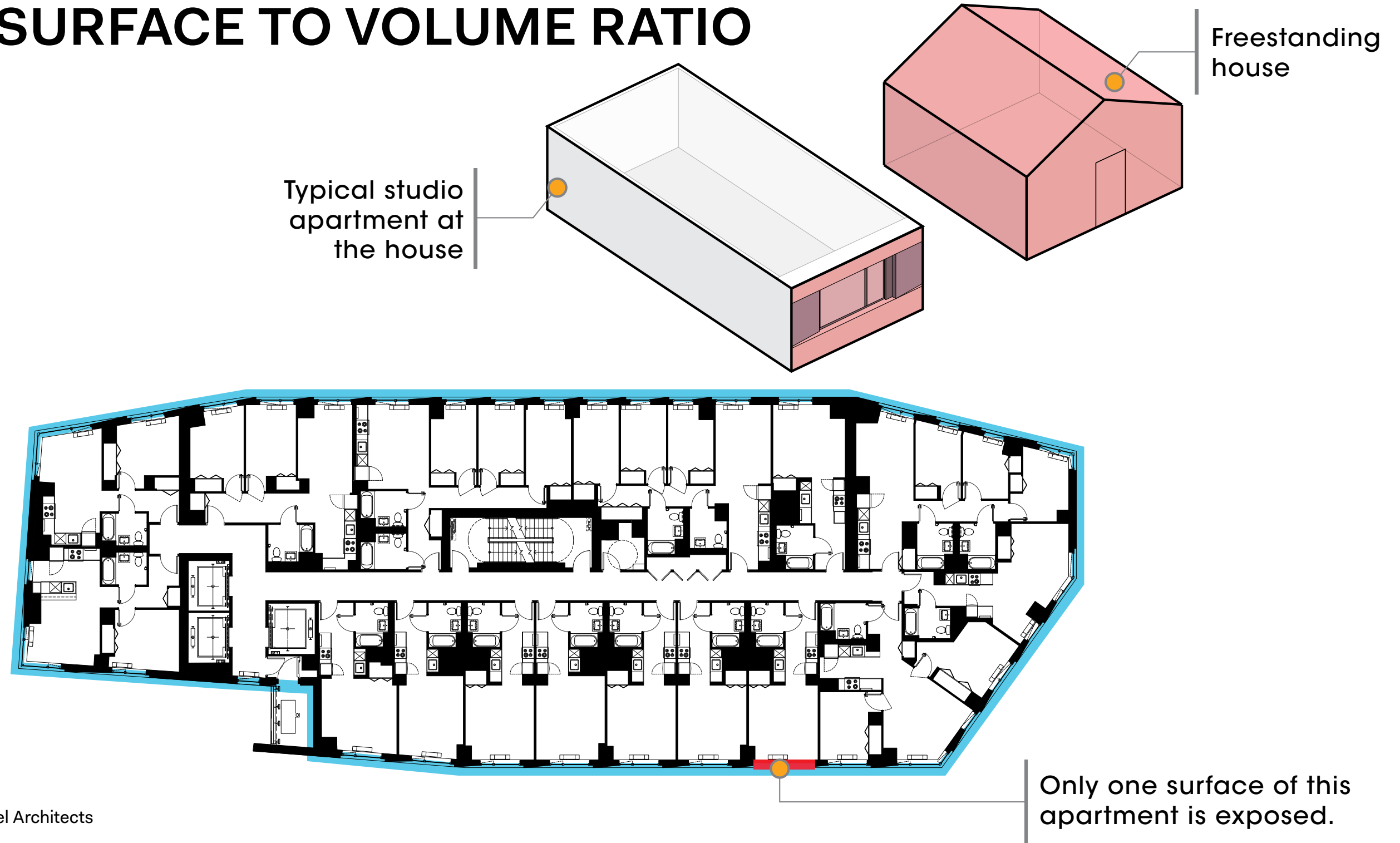
## ENVELOPE EFFICIENCY REQUIREMENTS

ROOF	R-30
ABOVE GRADE WALLS	R-20
BELOW GRADE WALLS	R-10
WINDOWS - INSTALLED EFFECTIVE U-VALUE	0.25 Btu/hr*ft <sup>2</sup> *F
GLAZING SHGC	0.27
FACADE AIR TIGHTNESS REQUIREMENT	0.08 cfm/sf-facade @ 50 Pascals





# LOW SURFACE TO VOLUME RATIO



PASSIVE HOUSE ENCLOSURE

RESIDENTIAL

RESIDENTIAL TERRACE

EDUCATIONAL FACILITY

CULTURAL

MEDICAL

RESIDENTIAL LOBBY

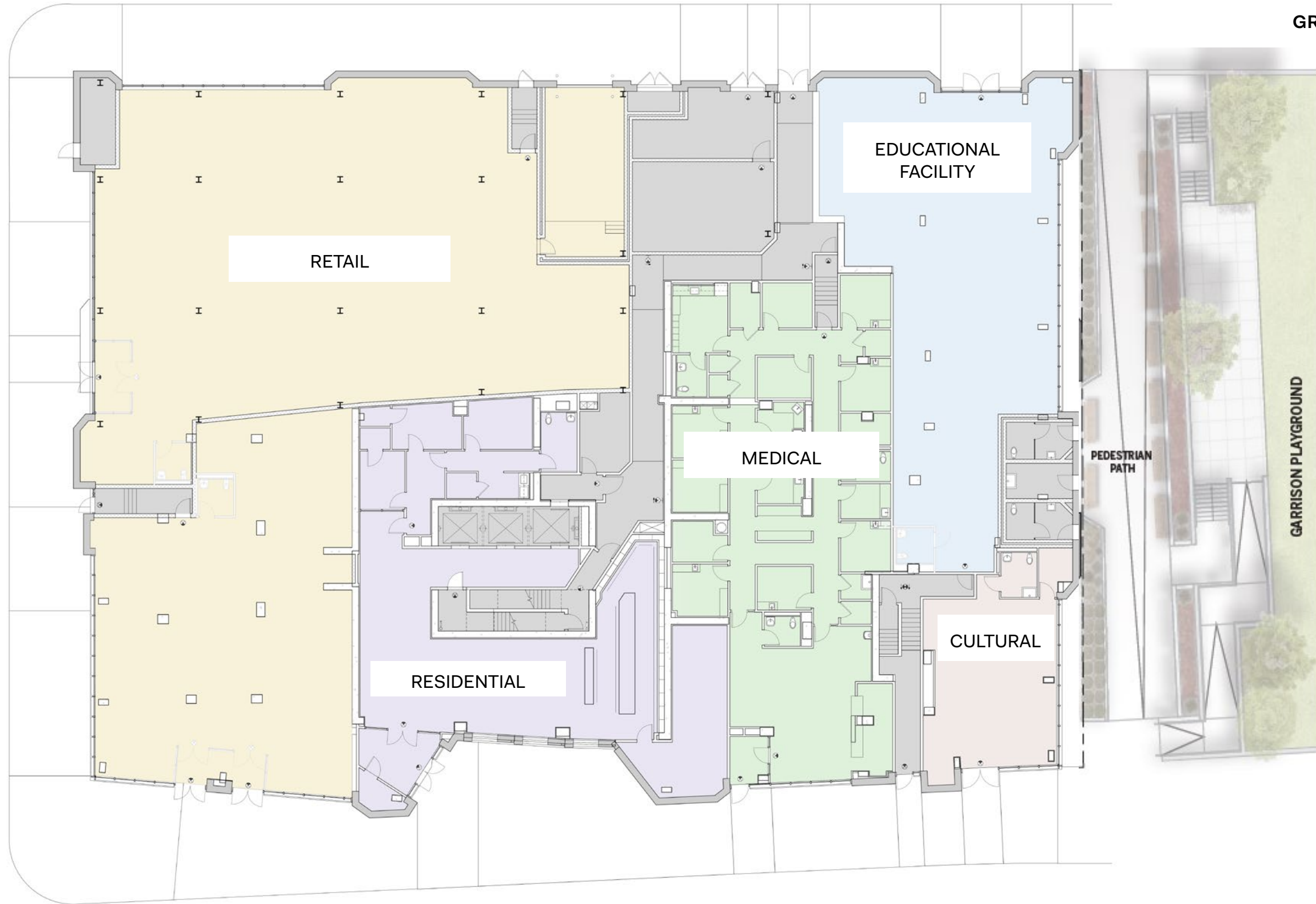
RETAIL



WALTON AVENUE

GROUND FLOOR PLAN

EAST 144TH STREET



RETAIL

EDUCATIONAL FACILITY

MEDICAL

RESIDENTIAL

CULTURAL

PEDESTRIAN PATH

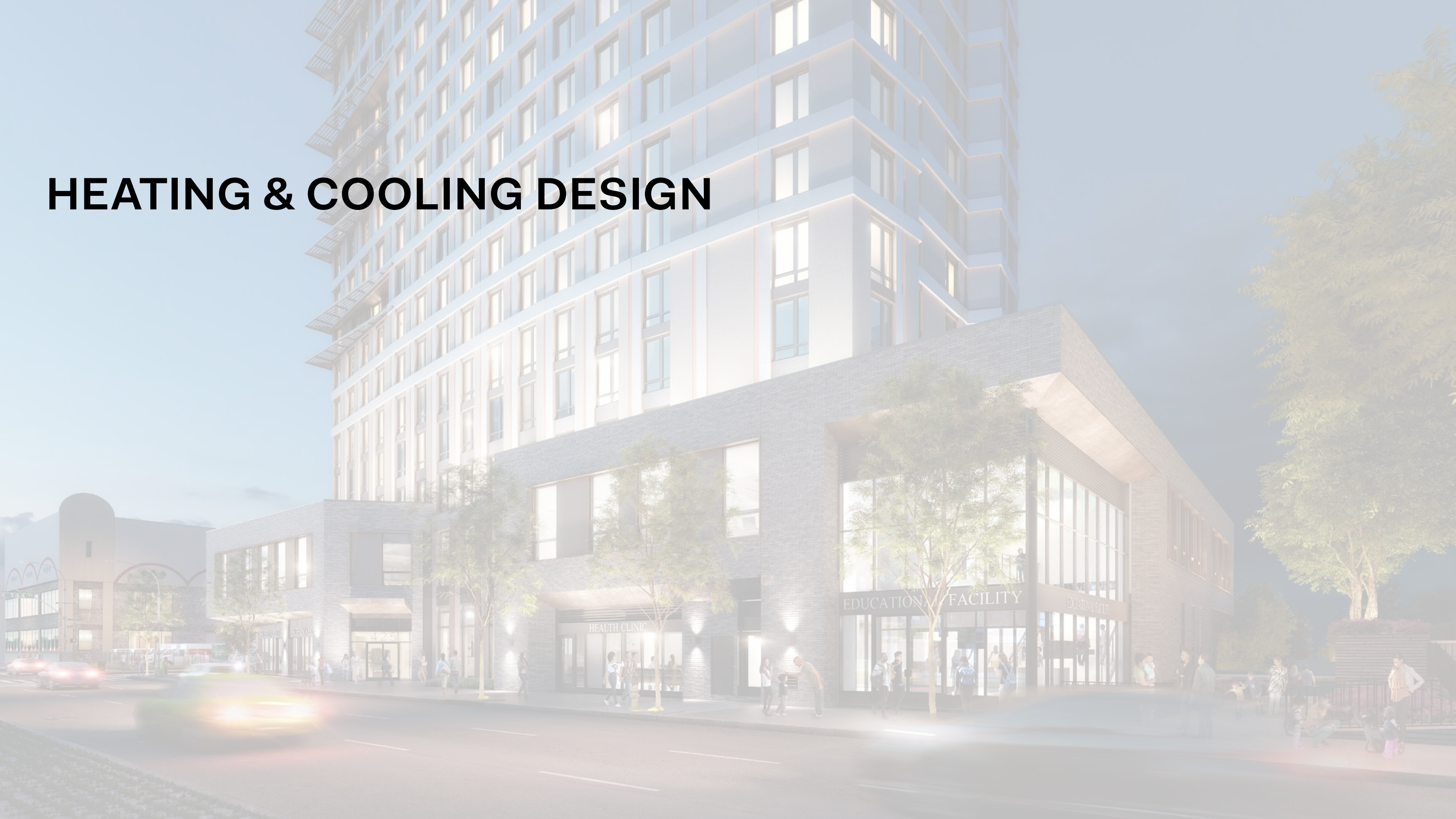
GARRISON PLAYGROUND

GRAND CONCOURSE

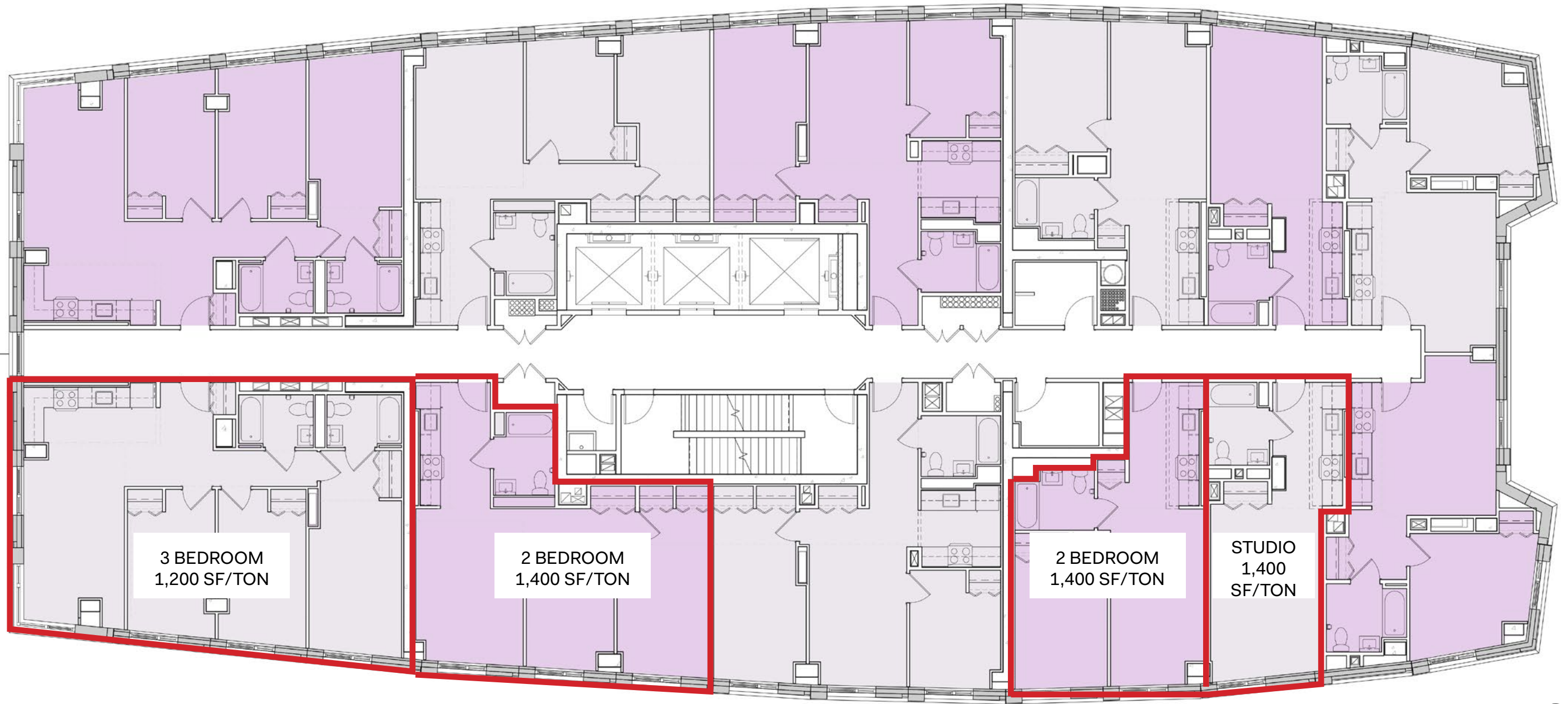




# HEATING & COOLING DESIGN



# SYSTEM SIZING



Typical Multi-Family Building: 500-700 SF/TON Cooling Load



# CONSTRUCTION

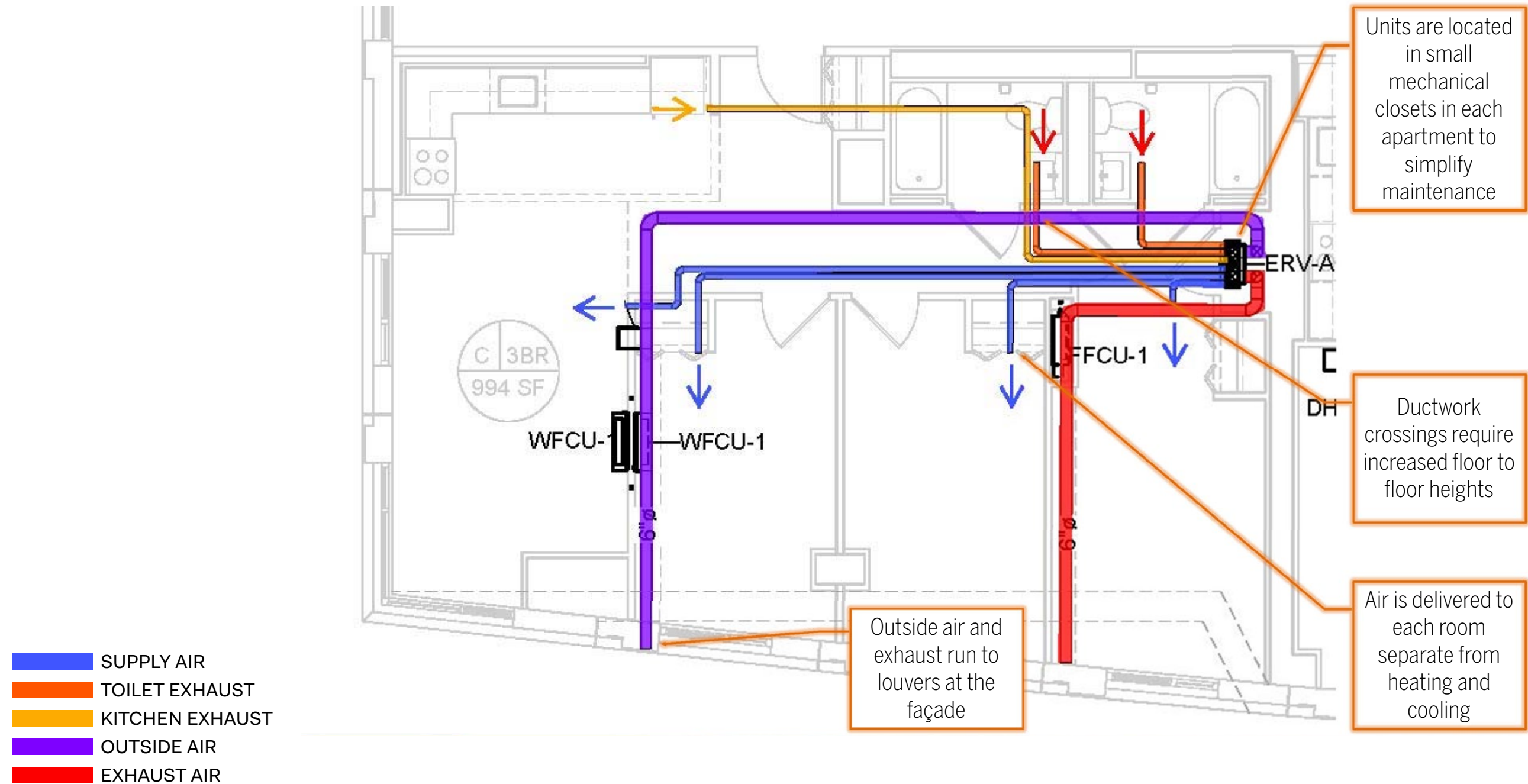


# VENTILATION DESIGN



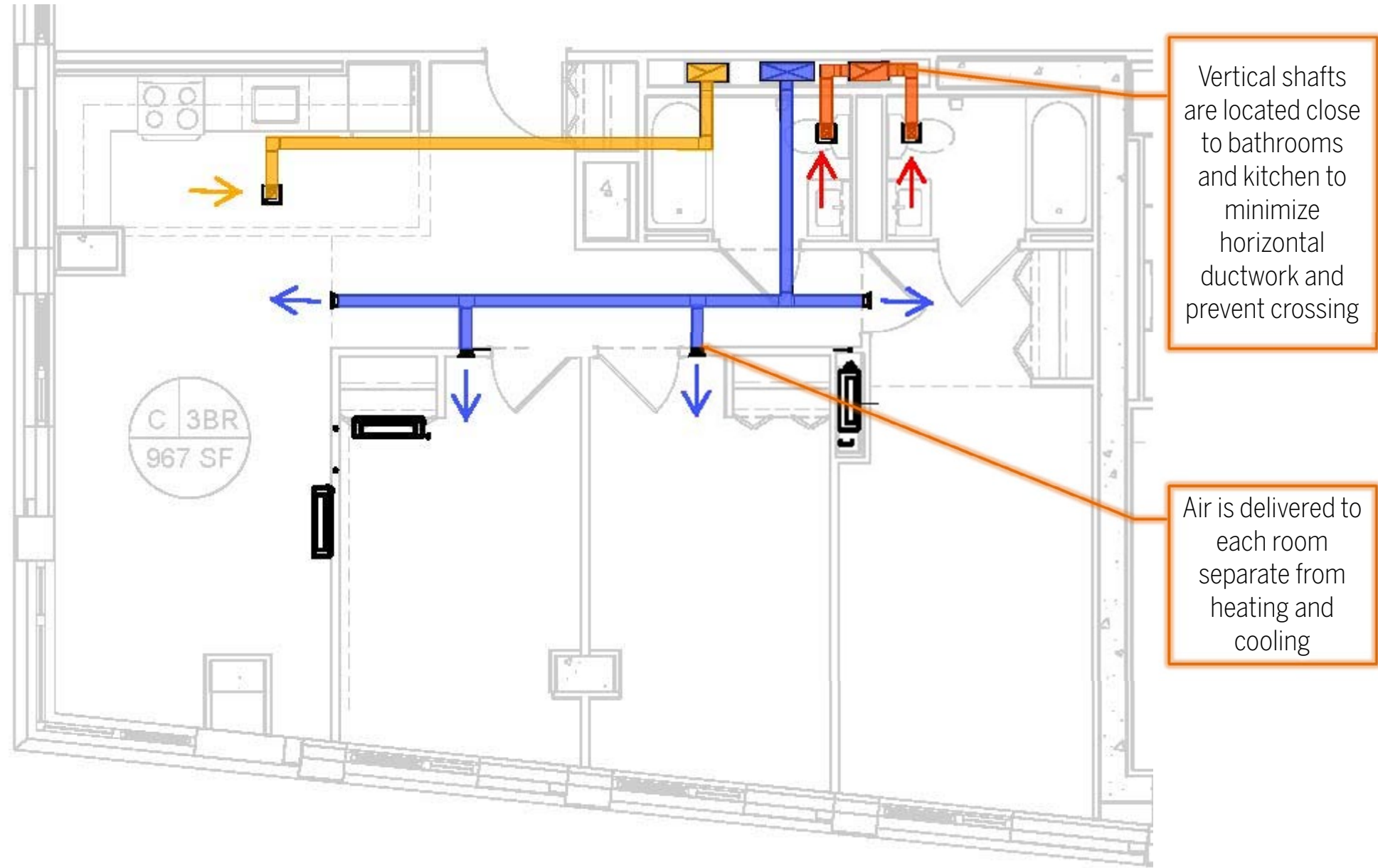
# UNITIZED ERV CONCEPT

## 425 Grand Concourse



# CENTRALIZED ERV DESIGN




## 425 Grand Concourse

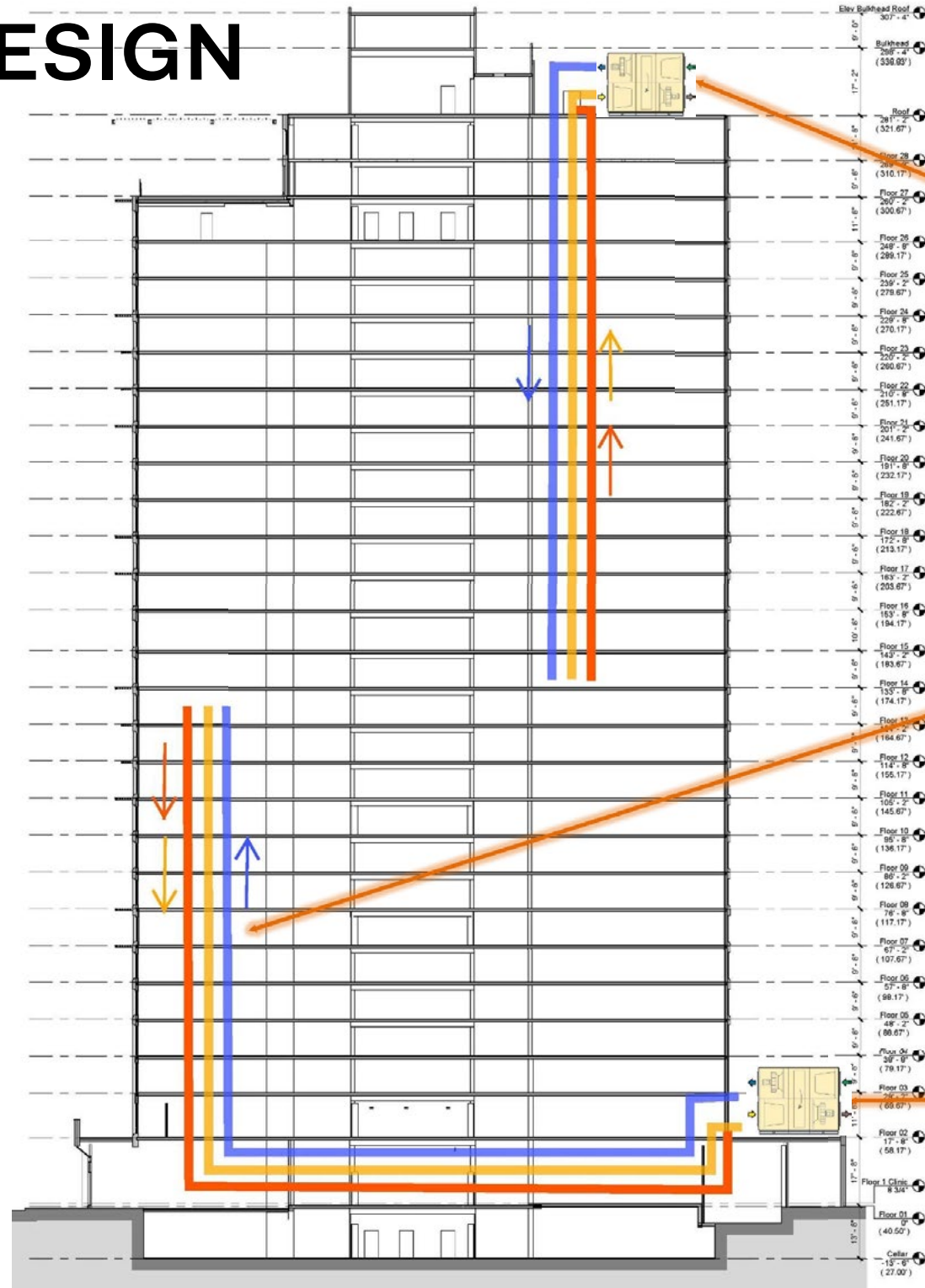


- █ SUPPLY AIR
- █ TOILET EXHAUST
- █ KITCHEN EXHAUST

# CENTRALIZED ERV DESIGN

## 425 Grand Concourse

-  SUPPLY AIR
-  TOILET EXHAUST
-  KITCHEN EXHAUST



ERVs on high roof to supply upper floors

Constant Air Regulators (CARs) on each floor maintain a balanced system

ERVs on low roof to supply bottom floors

# CONSTRUCTION





# INTERNAL MOISTURE CONTROL



# INTERNAL MOISTURE—VENTILATION UNITS

## ERV

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### PROS—SUMMER

- Keeps moisture out of interior spaces
- Cooling loads minimized

### CONS—WINTER

- If internal moisture generation high, keeps moisture in

## HRV

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### PROS—WINTER

- If moisture generation high, flushes moisture out of building

### CONS—SUMMER

- High moisture exterior air brought indoors
- Cooling loads increased

# CENTRALIZED ERV—UNIT HUMIDITY ANALYSIS

## 425 Grand Concourse

	3BR	2BR	2BR	1BR	St	1BR	3BR	2BR	2BR	1BR	St	1BR
	ERV-3						ERV-4					
Floor 26		Unit A	Unit M	Unit L	Unit N			Unit D	Unit E	Unit F	Unit G	Unit H
Floor 25			Unit M	Unit L	Unit K				Unit E	Unit F	Unit G	Unit H
Floor 24	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H
Floor 23	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H
Floor 22	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H
Floor 21	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H
Floor 20	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H
Floor 19	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H
Floor 18	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H
Floor 17	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H
Floor 16	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H
Floor 15	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H
Floor 14	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J
Floor 13	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J
Floor 12	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J
Floor 11	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J
Floor 10	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J
Floor 9	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J
Floor 8	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J
Floor 7	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J
Floor 6	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J
Floor 5	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J
Floor 4	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J
Floor 3	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M			
	ERV-1						ERV-2					

# CENTRALIZED ERV—UNIT HUMIDITY ANALYSIS

## 425 Grand Concourse

	3BR	2BR	2BR	1BR	St	1BR	3BR	2BR	2BR	1BR	St	1BR	3BR	2BR	2BR	1BR	St	1BR	3BR	2BR	2BR	1BR	St	1BR	
													ERV-3						ERV-4						
Floor 26							Unit A	Unit M	Unit L	Unit N							Unit D	Unit E	Unit F	Unit G	Unit H				
Floor 25										Unit M	Unit L	Unit K										Unit E	Unit F	Unit G	Unit H
Floor 24							Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H							
Floor 23							Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H							
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Floor 20							Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H							
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Floor 17							Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H							
Floor 16							Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H							
Floor 15							Unit B	Unit A	Unit M	Unit L	Unit K	Unit J	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H							
Floor 14	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J													
Floor 13	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J													
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Floor 5	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J													
Floor 4	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M	Unit L	Unit K	Unit J													
Floor 3	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit B	Unit A	Unit M																
	ERV-1						ERV-2																		

# CENTRALIZED ERV—UNIT HUMIDITY ANALYSIS

## 425 Grand Concourse

	3BR	2BR	2BR	1BR	St	1BR	3BR	2BR	2BR	1BR	St	1BR
Floor 14	Unit C 39%	Unit D 39%	Unit E 39%	Unit F 39%	Unit G 28%	Unit H 39%	Unit B 28%	Unit A 39%	Unit M 39%	Unit L 39%	Unit K 39%	Unit J 39%
Floor 13	Unit C 39%	Unit D 50%	Unit E 50%	Unit F 28%	Unit G 50%	Unit H 39%	Unit B 28%	Unit A 39%	Unit M 39%	Unit L 39%	Unit K 28%	Unit J 28%
Floor 12	Unit C 39%	Unit D 39%	Unit E 50%	Unit F 28%	Unit G 39%	Unit H 50%	Unit B 28%	Unit A 50%	Unit M 28%	Unit L 28%	Unit K 39%	Unit J 39%
Floor 11	Unit C 50%	Unit D 28%	Unit E 39%	Unit F 50%	Unit G 39%	Unit H 39%	Unit B 50%	Unit A 39%	Unit M 28%	Unit L 28%	Unit K 50%	Unit J 50%
Floor 10	Unit C 39%	Unit D 50%	Unit E 50%	Unit F 50%	Unit G 50%	Unit H 39%	Unit B 39%	Unit A 39%	Unit M 28%	Unit L 39%	Unit K 39%	Unit J 39%
Floor 9	Unit C 39%	Unit D 28%	Unit E 39%	Unit F 28%	Unit G 39%	Unit H 50%	Unit B 28%	Unit A 28%	Unit M 28%	Unit L 39%	Unit K 28%	Unit J 39%
Floor 8	Unit C 39%	Unit D 50%	Unit E 50%	Unit F 50%	Unit G 50%	Unit H 39%	Unit B 28%	Unit A 39%	Unit M 28%	Unit L 28%	Unit K 50%	Unit J 28%
Floor 7	Unit C 50%	Unit D 28%	Unit E 50%	Unit F 28%	Unit G 50%	Unit H 50%	Unit B 28%	Unit A 50%	Unit M 28%	Unit L 39%	Unit K 39%	Unit J 39%
Floor 6	Unit C 39%	Unit D 28%	Unit E 39%	Unit F 28%	Unit G 39%	Unit H 50%	Unit B 50%	Unit A 39%	Unit M 28%	Unit L 39%	Unit K 28%	Unit J 39%
Floor 5	Unit C 50%	Unit D 28%	Unit E 50%	Unit F 28%	Unit G 50%	Unit H 39%	Unit B 39%	Unit A 28%	Unit M 28%	Unit L 39%	Unit K 50%	Unit J 39%
Floor 4	Unit C 50%	Unit D 39%	Unit E 50%	Unit F 39%	Unit G 39%	Unit H 39%	Unit B 50%	Unit A 39%	Unit M 28%	Unit L 39%	Unit K 39%	Unit J 28%
Floor 3	Unit C 28%	Unit D 50%	Unit E 50%	Unit F 50%	Unit G 50%	Unit H 50%	Unit B 28%	Unit A 50%	Unit M 50%			
	ERV-1						ERV-2					

Humidity Load Legend

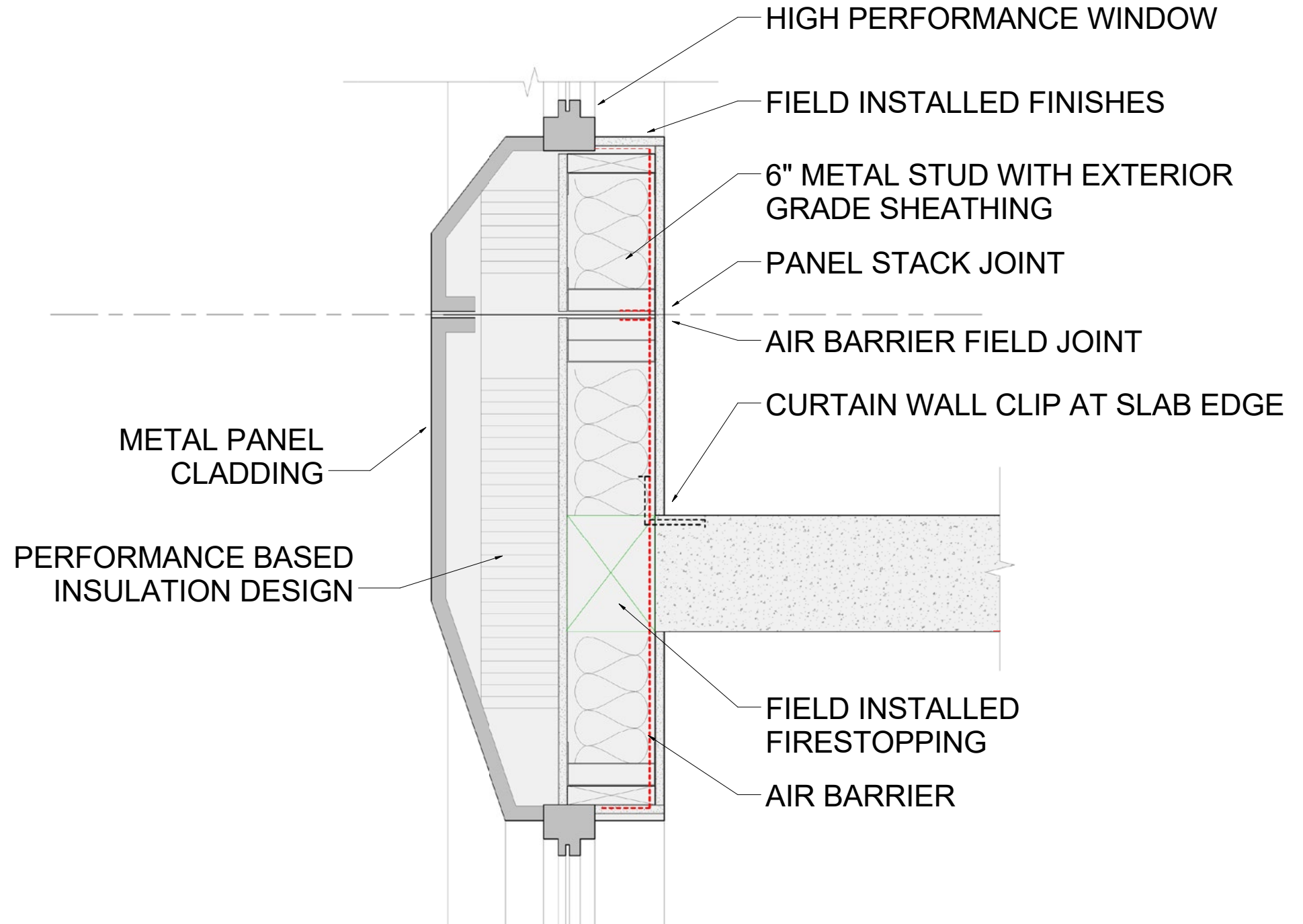
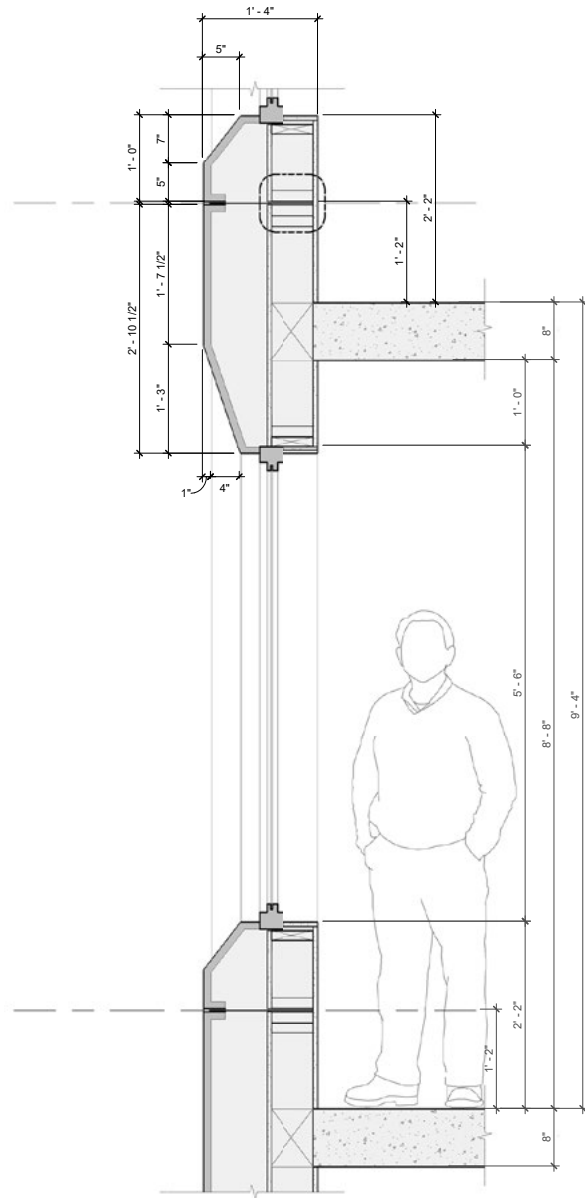
	Low	Medium	High
People	0.2250	0.4208	0.6167
Pets	0.0150	0.0225	0.0300
Plants	0.0124	0.0217	0.0310
Showers	0.7125	1.0823	1.4520
Cooking	0.5300	0.5300	0.5300
Total	1.4949	2.0773	2.6597
	28%	39%	50%

Blended Humidity	42%	38%	46%	37%	44%	44%	35%	40%	32%	36%	39%	37%
	42%						37%					

# ENVELOPE



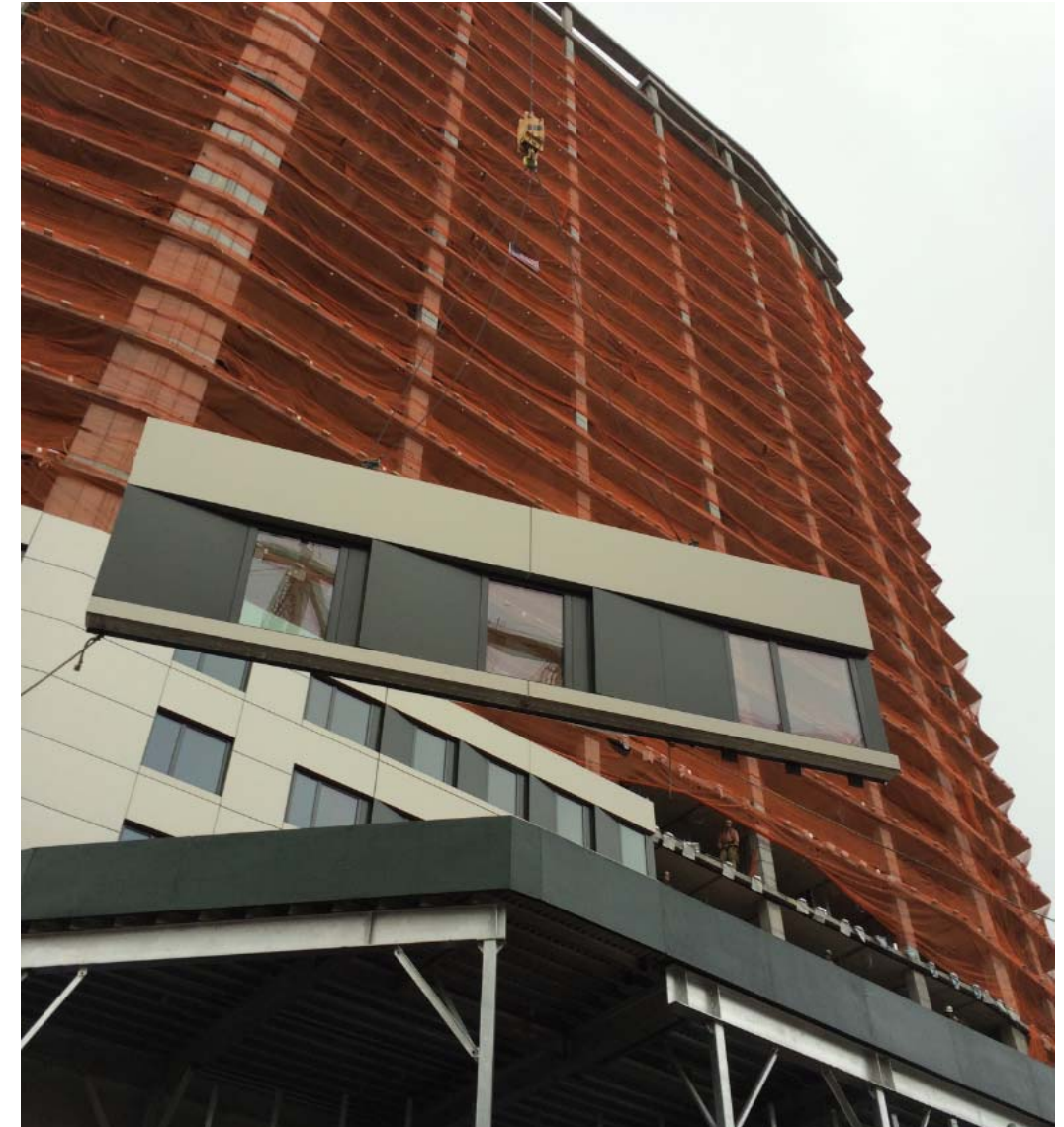
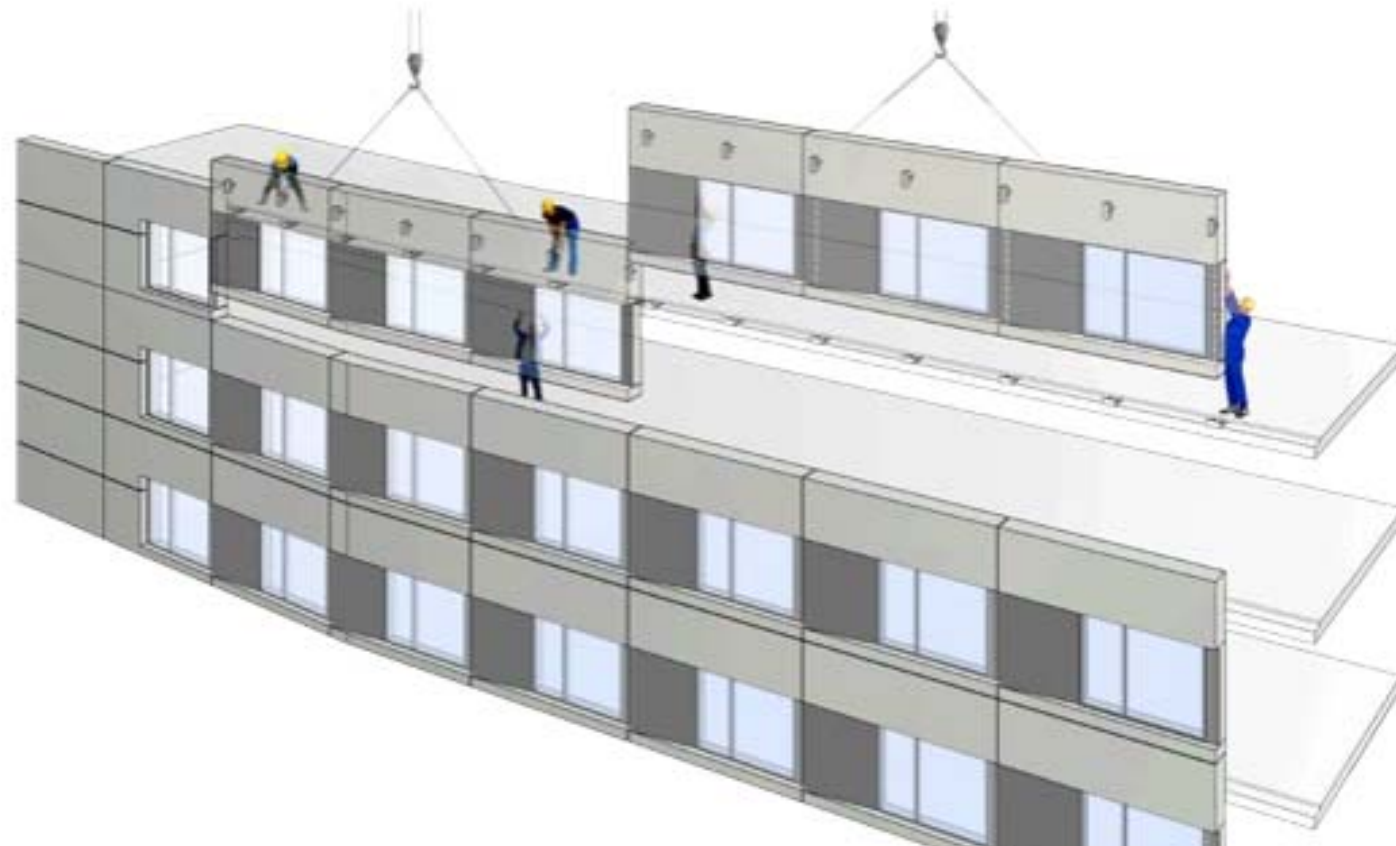
# PREFABRICATED WALL PANELS



# EVALUATING SCHEDULE, COST & CONSTRUCTABILITY

## Pre-Fab Mega Panels

- Tower crane requirements
- Interior work coordination
- Mitigating risk





# EVALUATING PROPOSED SYSTEMS

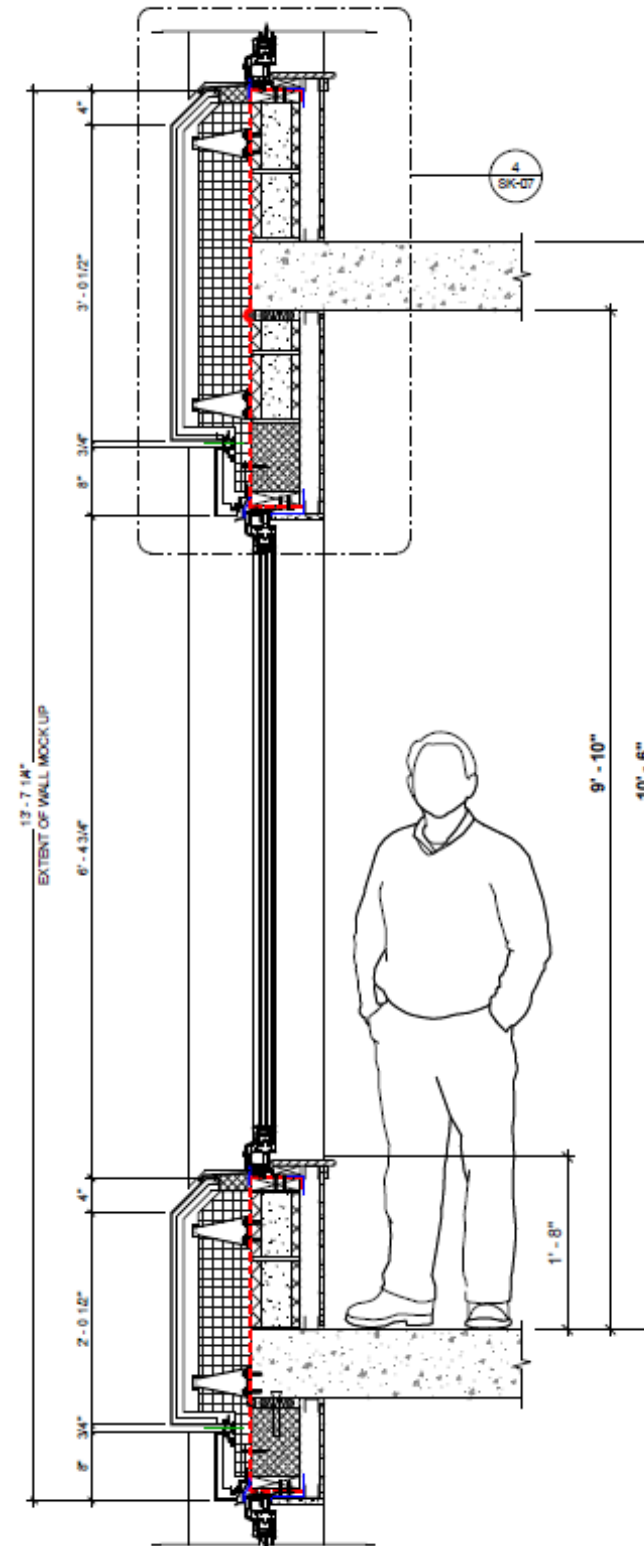
## Field-Constructed Panels

### PROS

- Does not require crane to install
- Availability of suppliers/installers
- More cost effective
- Achieves continuous vapor barrier & insulation
- Allows interior build-out to start early
- Allows for more flexibility and tolerance for penetration coordination

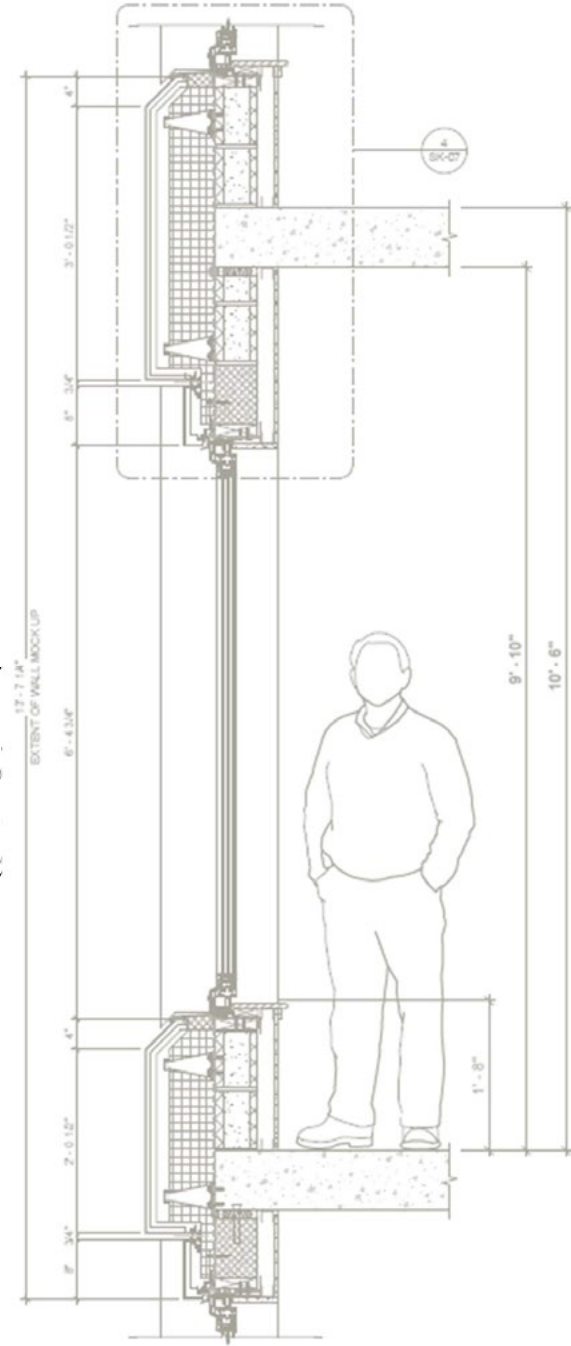
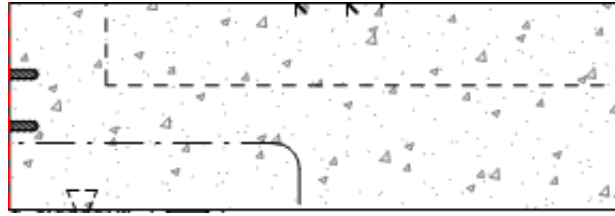
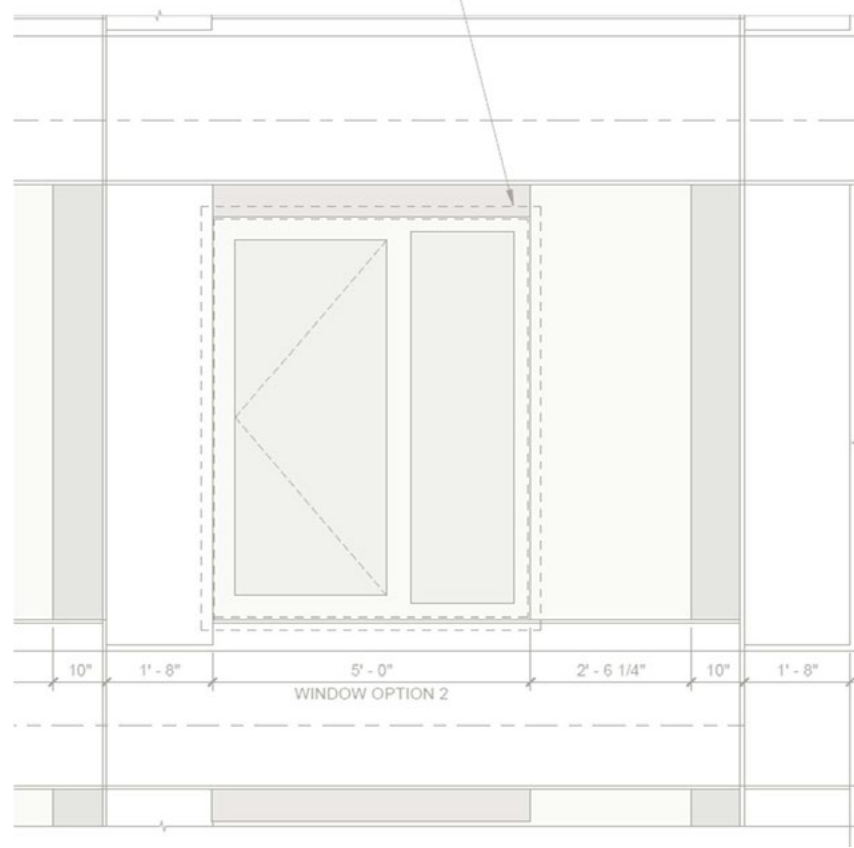
### CONS

- Warranty accountability issues
- Challenging QC procedures
- Weather dependent installation
- Extended installation duration



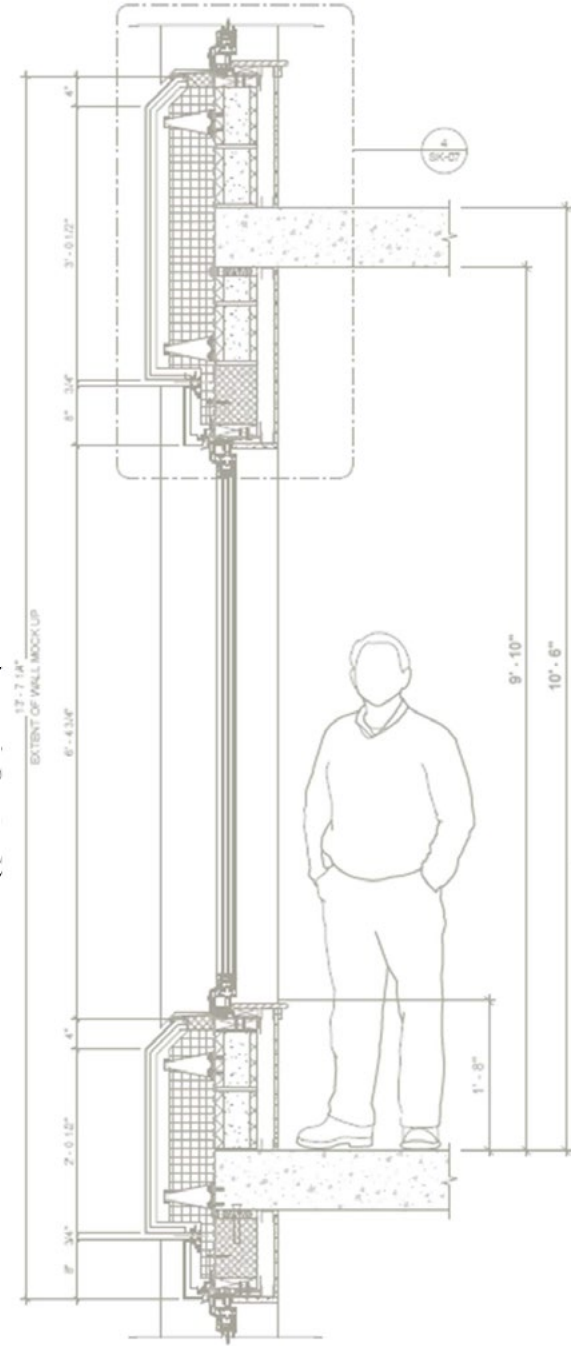
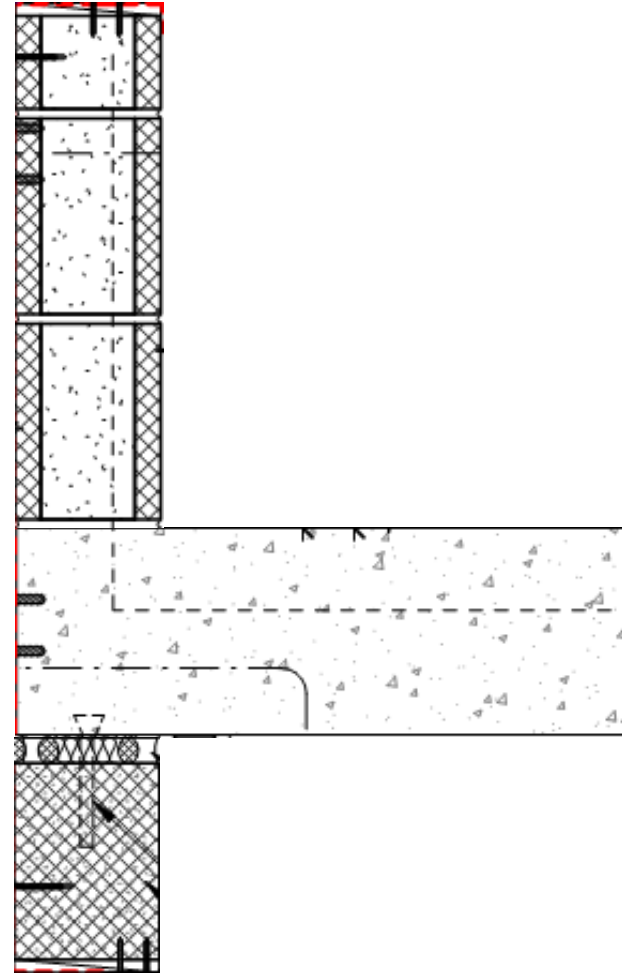
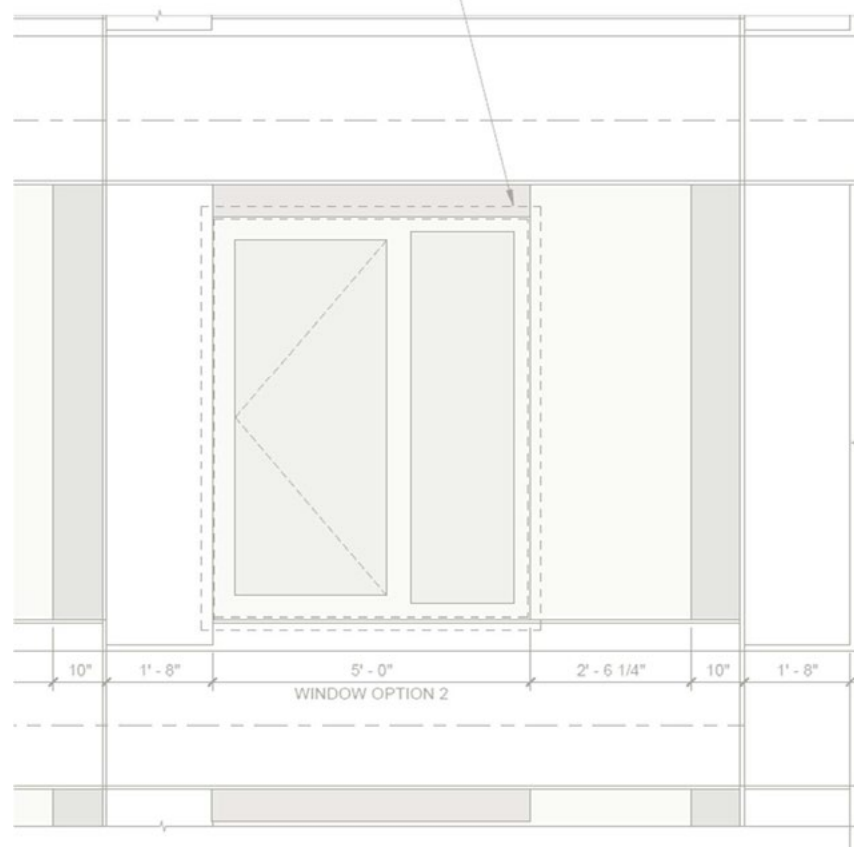
PREFAB WINDOW CORNERS, INTERIOR AND EXTERIOR TAPES AT WINDOW FRAME [DELTA-FAS CORNER + DELTA-FLASHING + DELTA FLEXX BAND + DELTA-MULTIBAND]

NOTE: BOTH WINDOW SHALL BE TESTED WITH TAPE AND WITHOUT TAPE TO SEE THE EXTENT OF BREACH



PREFAB WINDOW CORNERS, INTERIOR AND EXTERIOR TAPES AT WINDOW FRAME [DELTA-FAS CORNER + DELTA-FLASHING + DELTA FLEXX BAND + DELTA-MULTIBAND]

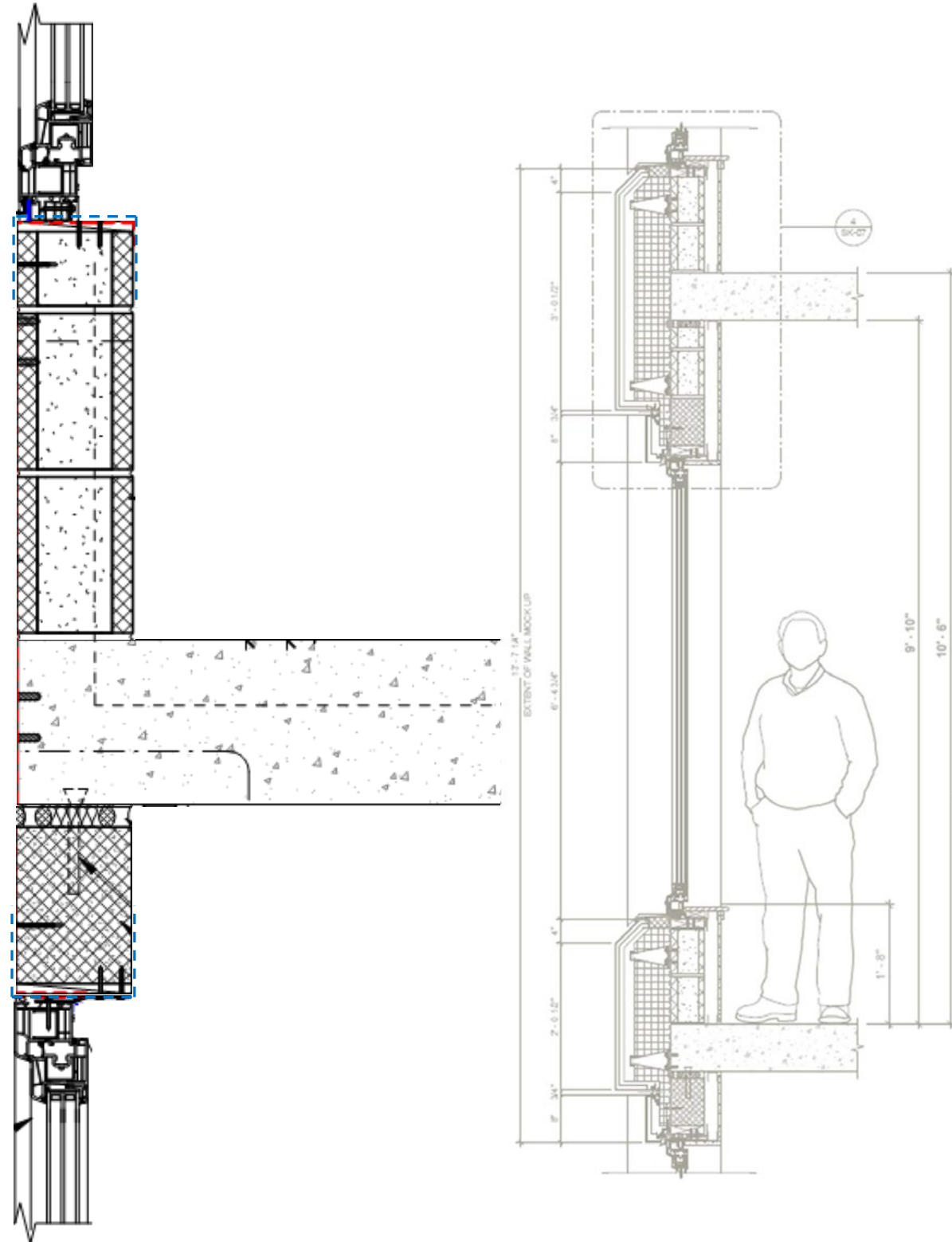
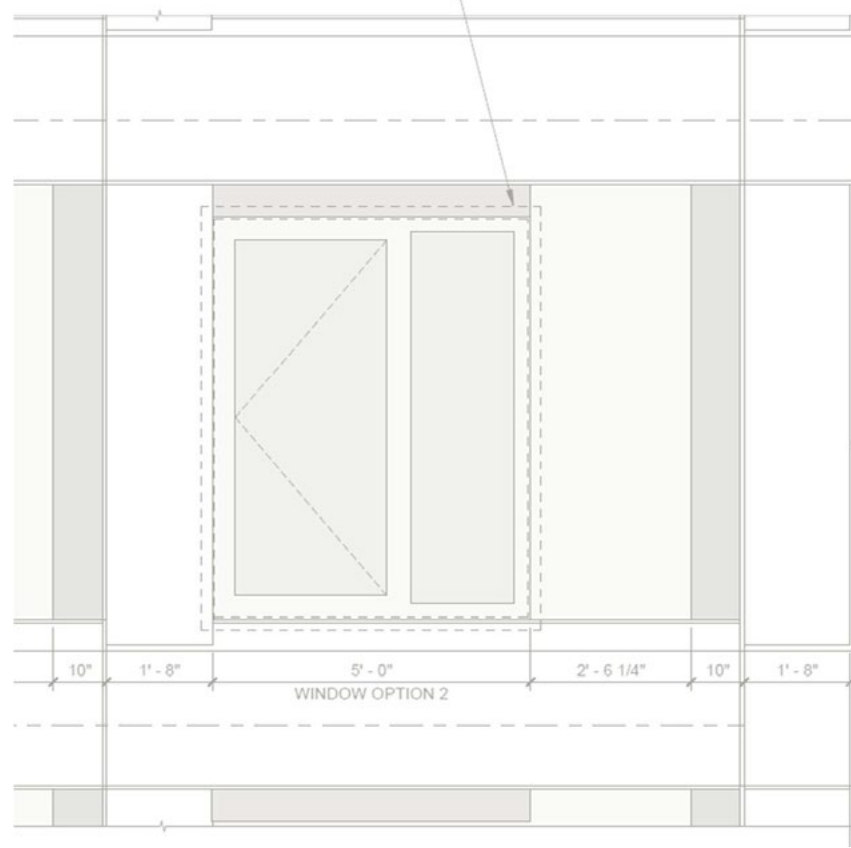
NOTE: BOTH WINDOW SHALL BE TESTED WITH TAPE AND WITHOUT TAPE TO SEE THE EXTENT OF BREACH





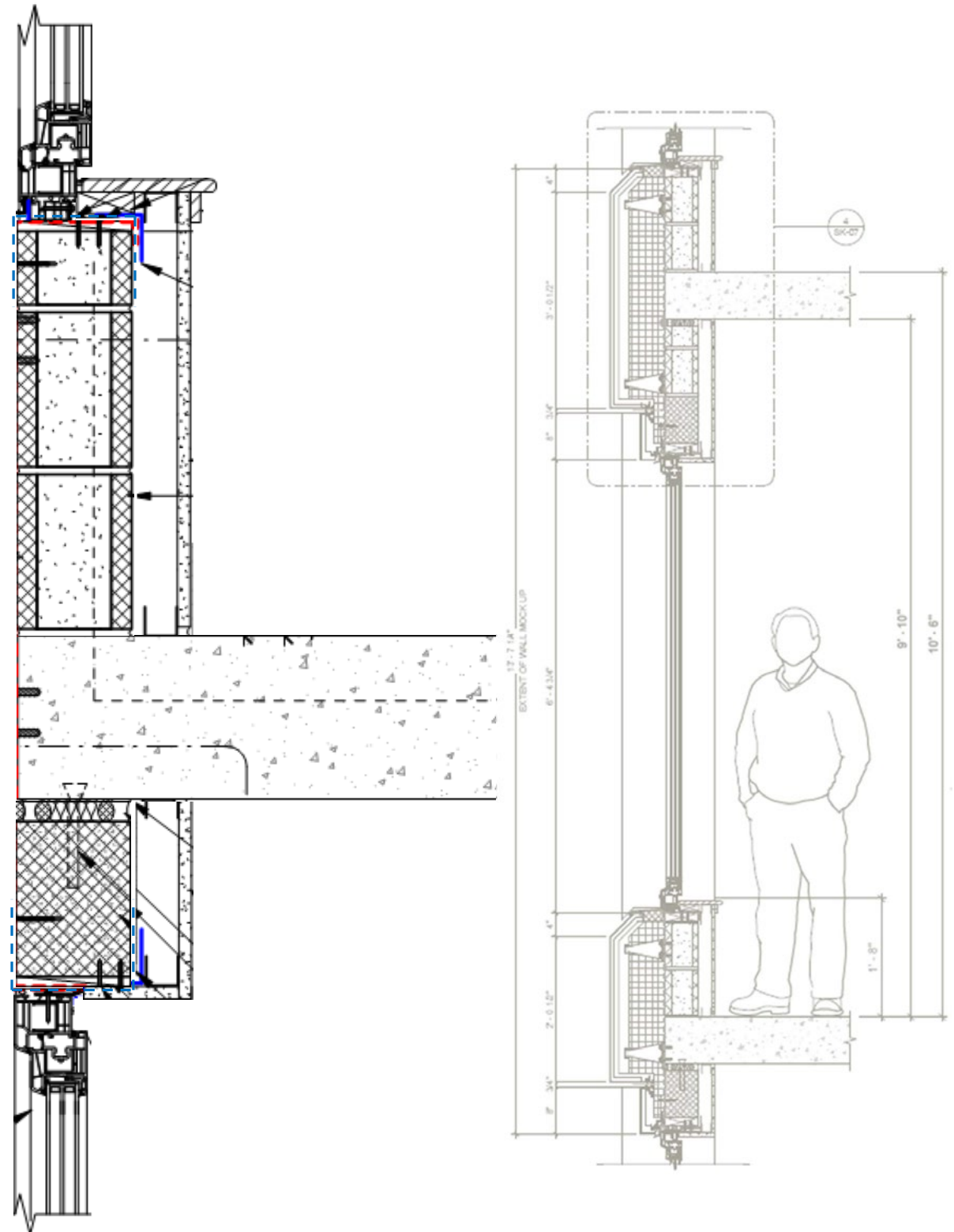
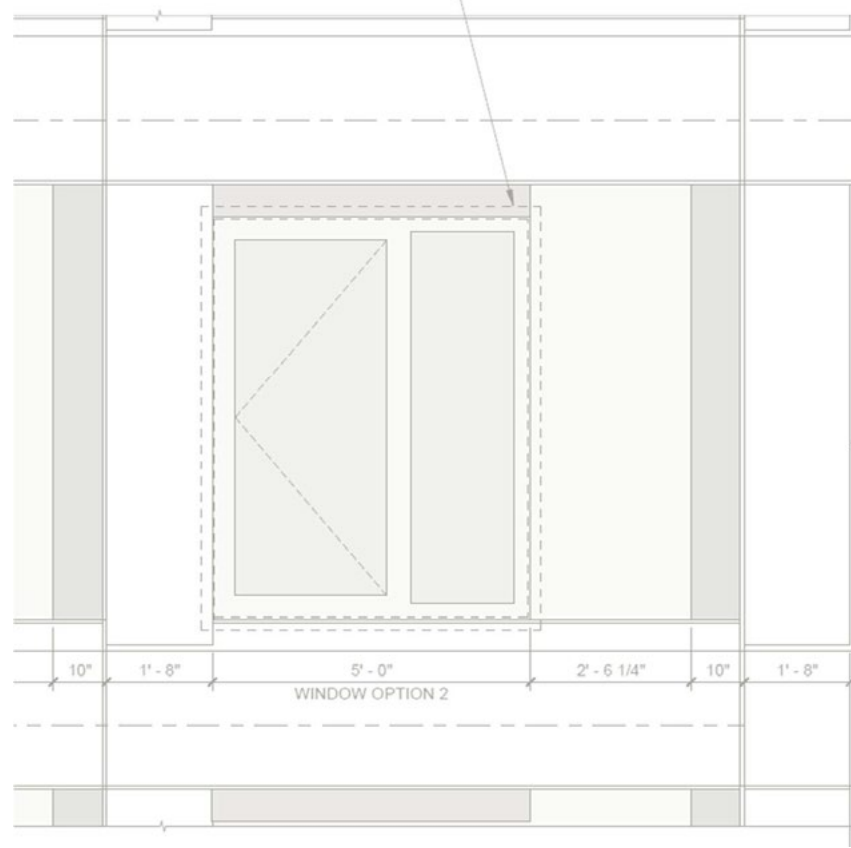
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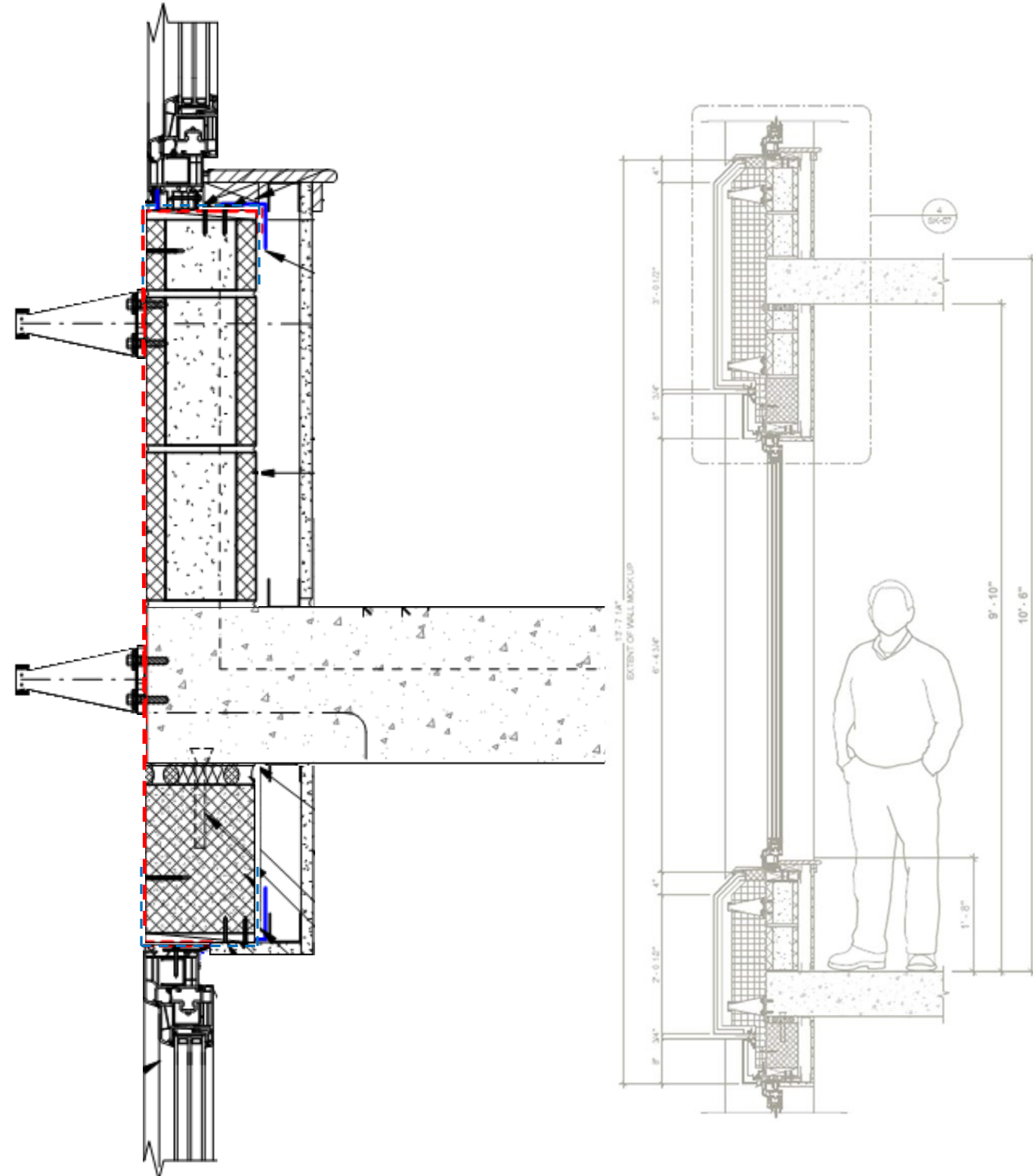
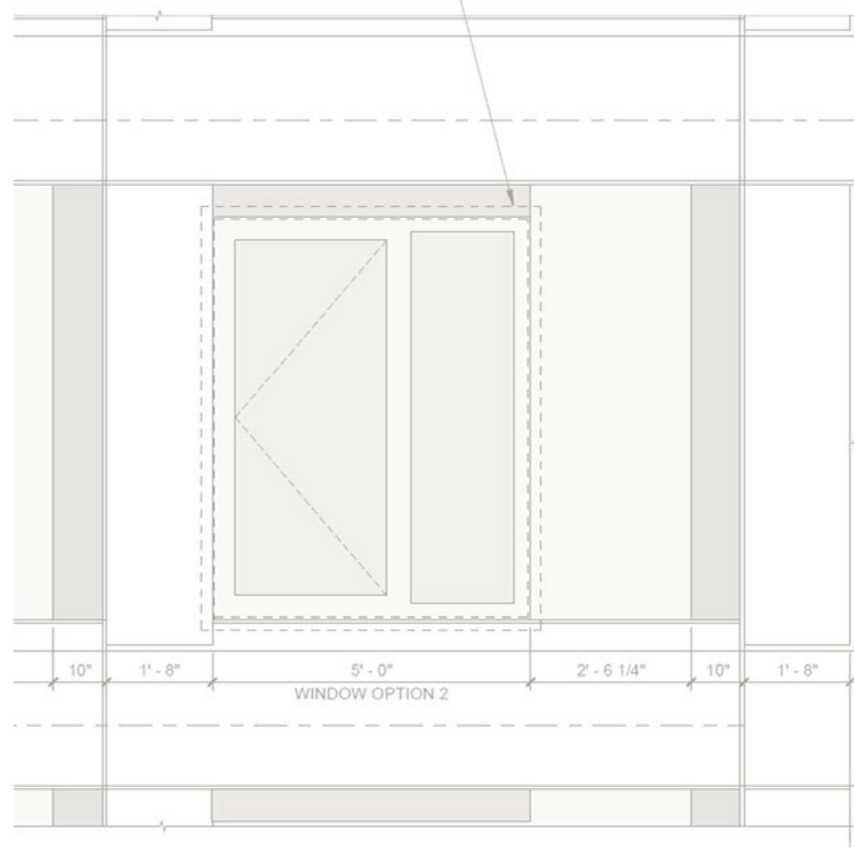
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PREFAB WINDOW CORNERS, INTERIOR AND EXTERIOR TAPES AT WINDOW FRAME [DELTA-FAS CORNER + DELTA-FLASHING + DELTA FLEXX BAND + DELTA-MULTIBAND]

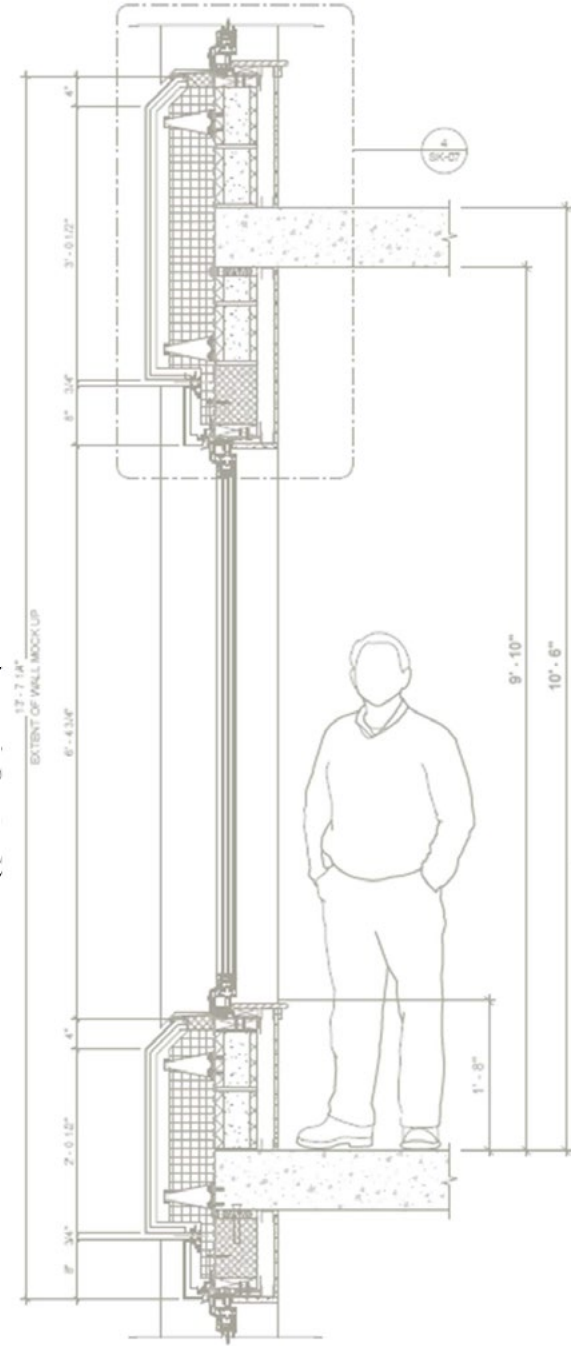
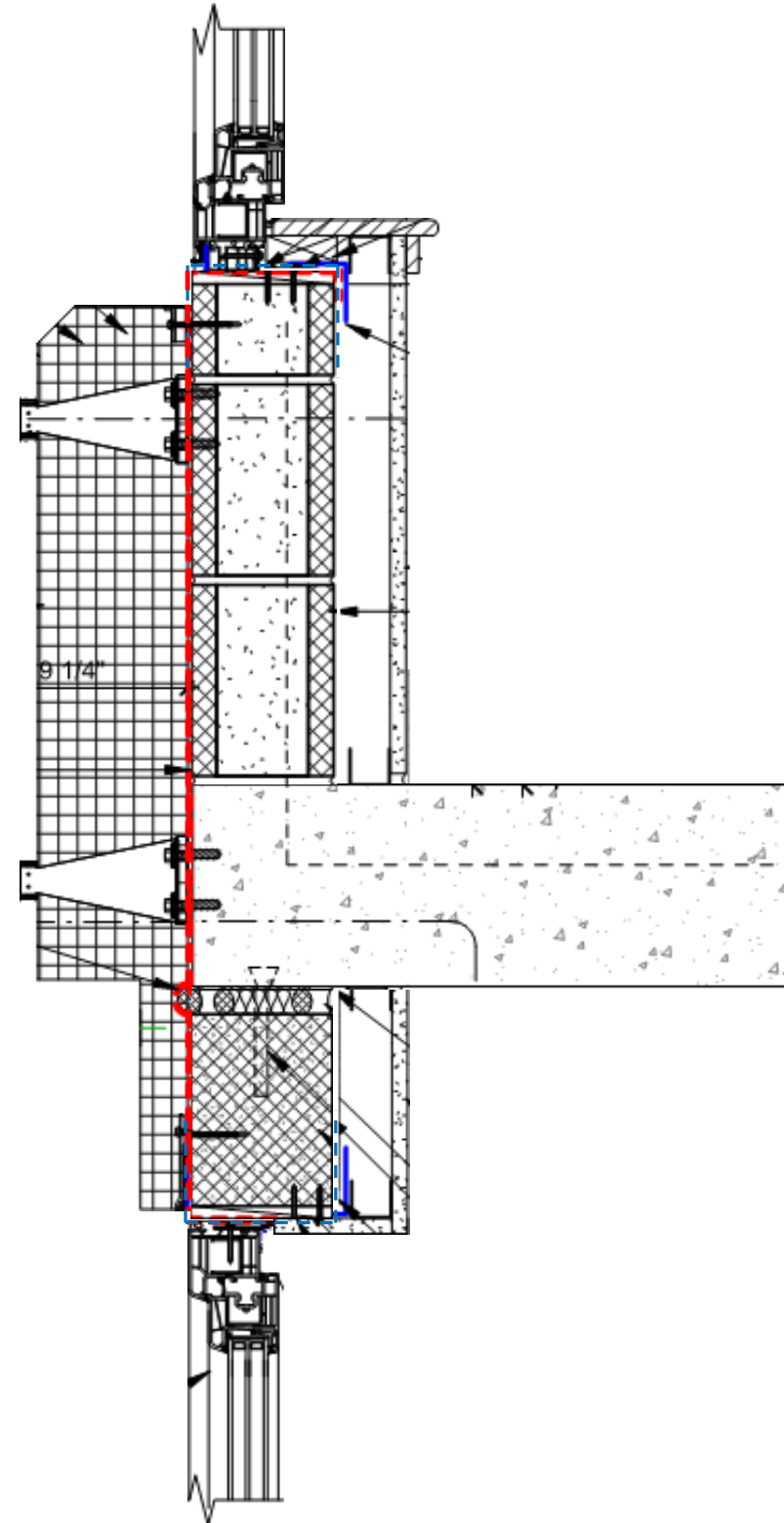
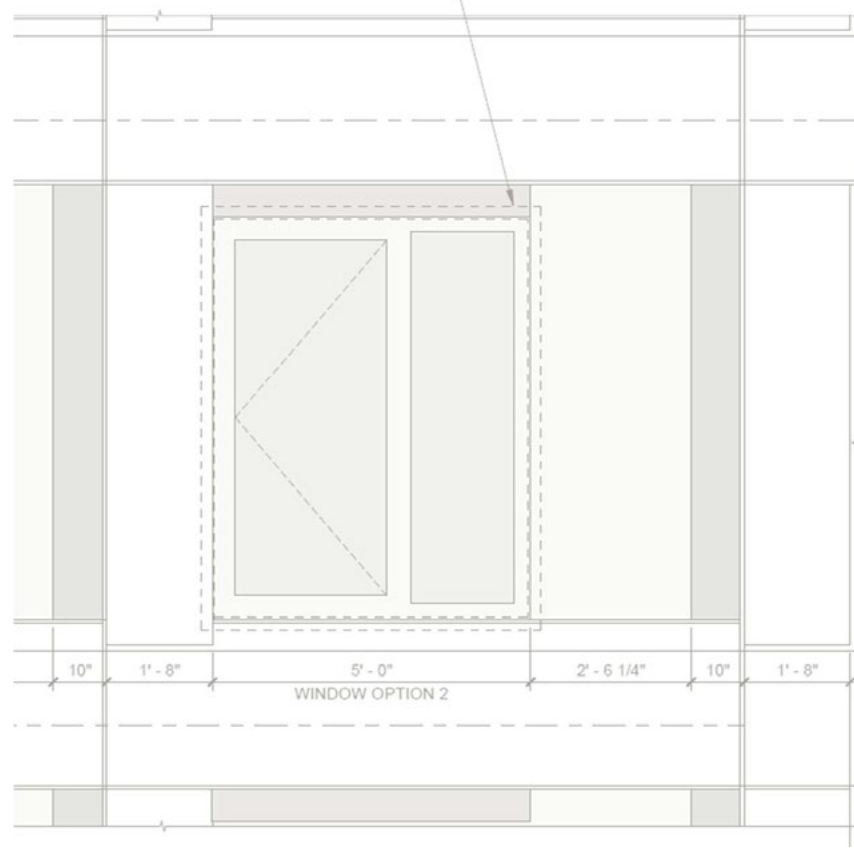
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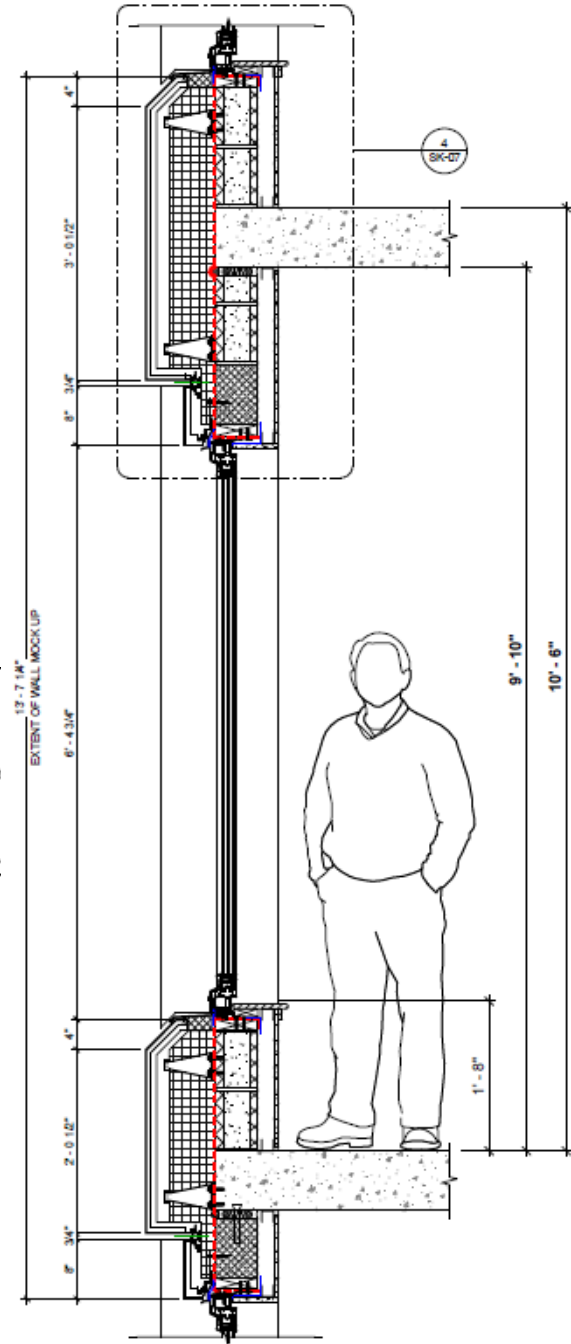
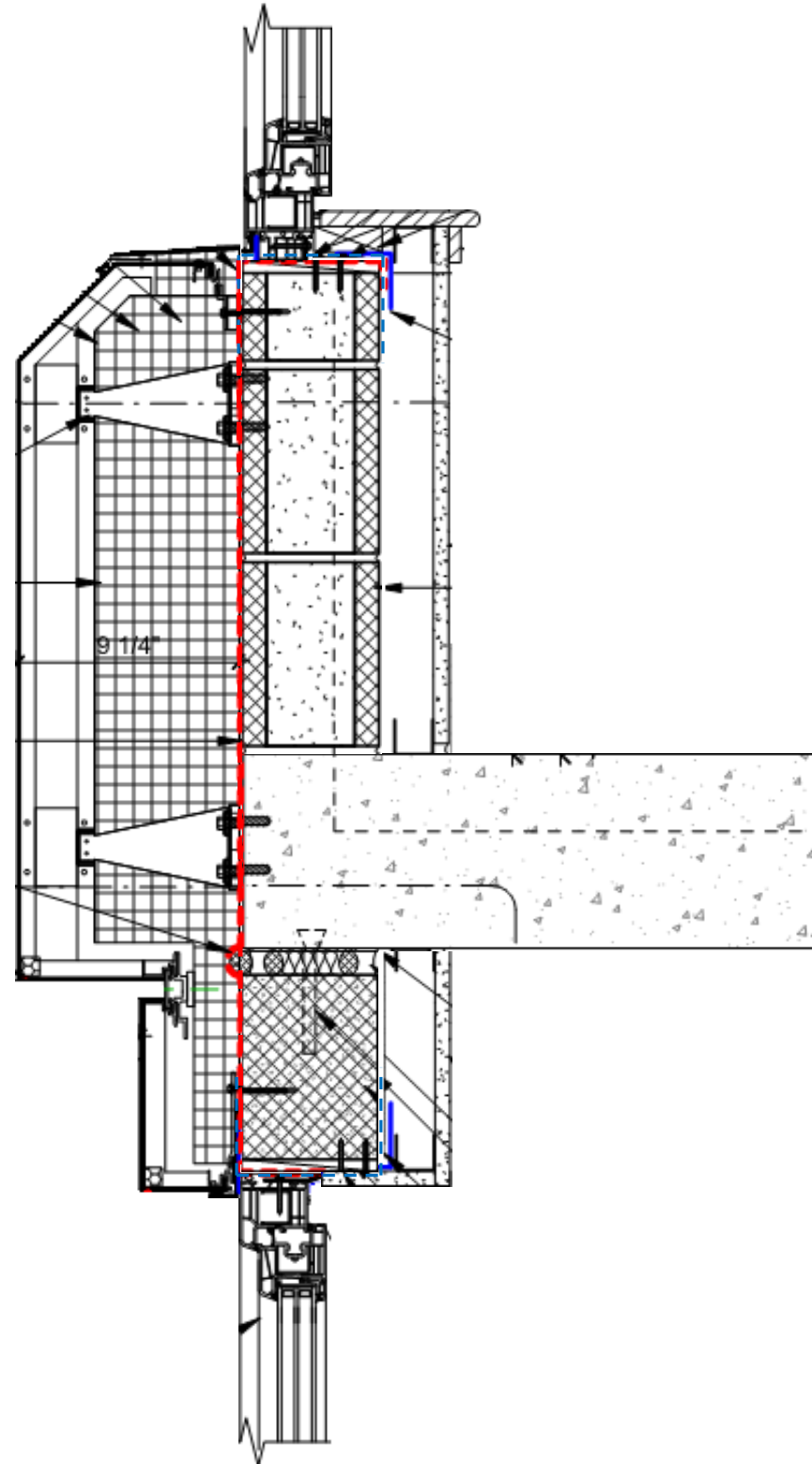
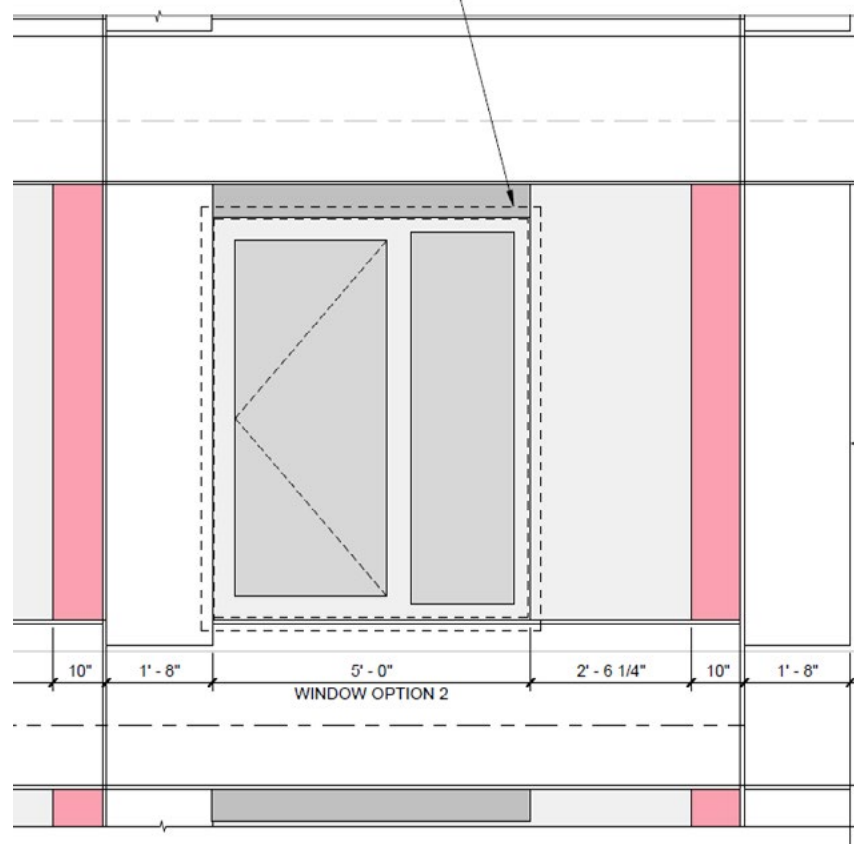
PREFAB WINDOW CORNERS, INTERIOR AND EXTERIOR TAPES AT WINDOW FRAME [DELTA-FAS CORNER + DELTA-FLASHING + DELTA FLEXX BAND + DELTA-MULTIBAND]

NOTE: BOTH WINDOW SHALL BE TESTED WITH TAPE AND WITHOUT TAPE TO SEE THE EXTENT OF BREACH

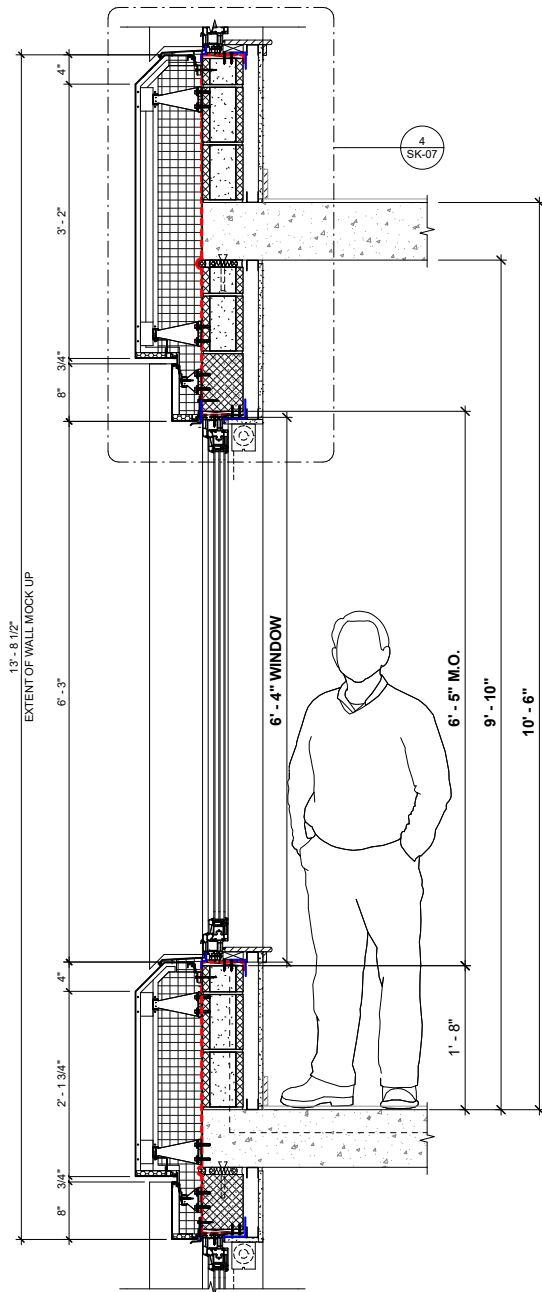


PREFAB WINDOW CORNERS, INTERIOR AND EXTERIOR TAPES AT WINDOW FRAME [DELTA-FAS CORNER + DELTA-FLASHING + DELTA FLEXX BAND + DELTA-MUL TIBAND]

NOTE: BOTH WINDOW SHALL BE TESTED WITH TAPE AND WITHOUT TAPE TO SEE THE EXTENT OF BREACH



# FIELD BUILT ASSEMBLY



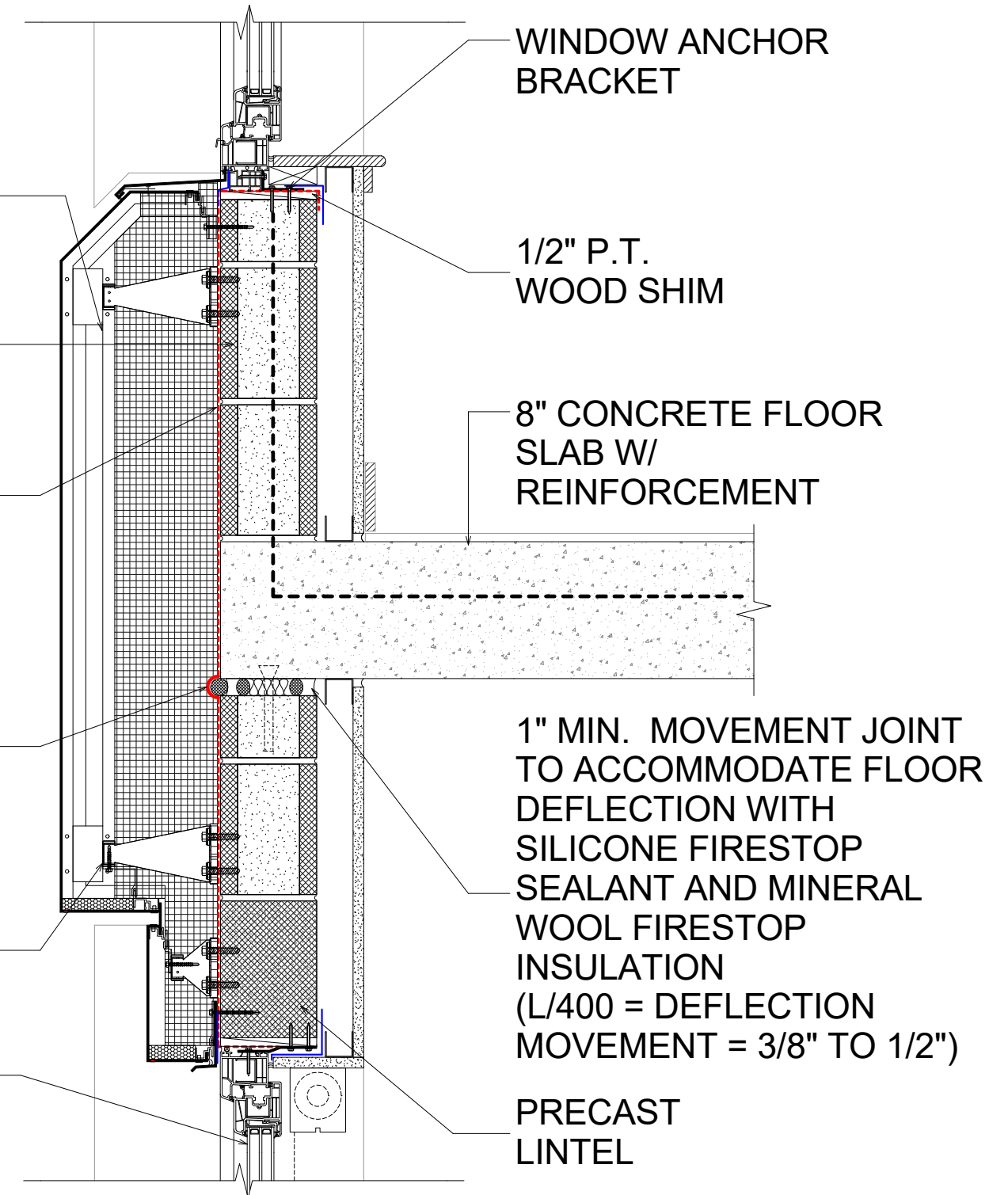
THERMALLY ISOLATING  
RAINSCREEN ATTACHMENT  
SYSTEM [KNIGHT WALL]

SELF-ADHERED VAPOR PERMEABLE,  
WATER-RESISTIVE BARRIER  
& AIR BARRIER [DELTA VENT-SA]  
FOLD IN TO THE INTERIOR AND TAPE  
ALL EDGES

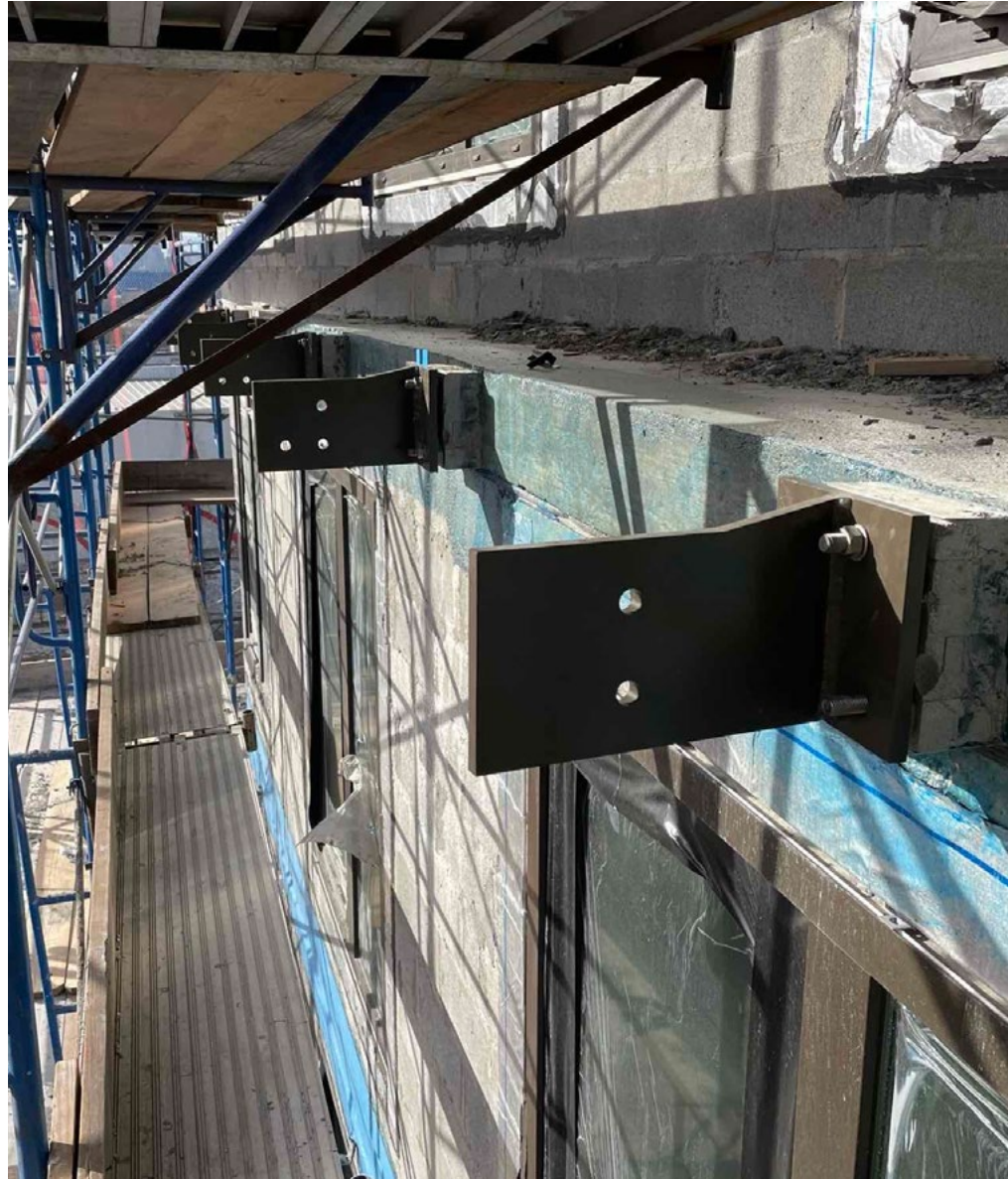
1" FOAM ROD TO ALLOW SELF-  
ADHERED VAPOR PERMEABLE,  
WATER-RESISTIVE BARRIER & AIR  
BARRIER TO MOVE IN DEFLECTION  
(L/400 = DEFLECTION MOVEMENT =  
3/8" TO 1/2")

THERMALLY ISOLATING  
RAINSCREEN ATTACHMENT  
SYSTEM [KNIGHT WALL]

UPVC OR ALUMINUM WINDOW  
[U-INSTALLED = 0.25 Btu/hr.sf.yr]



# CONSTRUCTION—THERMAL BREAKS



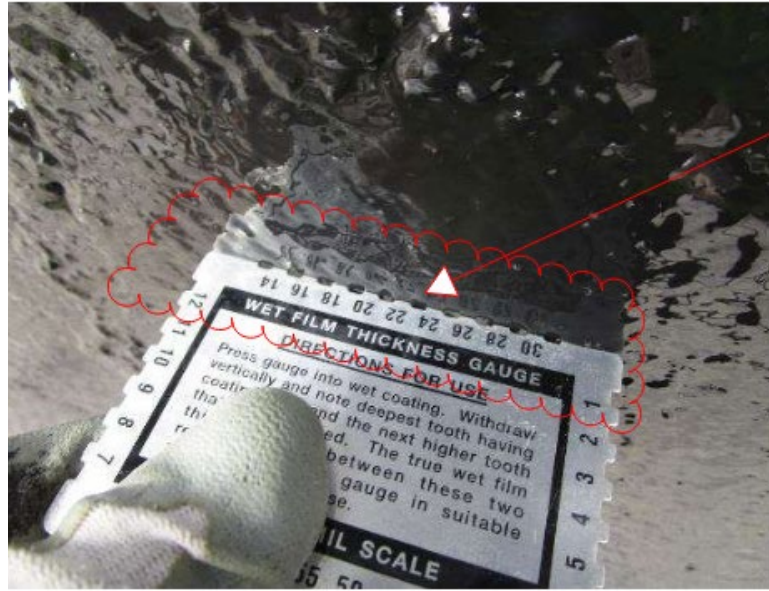
# CONSTRUCTION—WINDOWS



# CONSTRUCTION—EXTERIOR WALL AVB



# CONSTRUCTION—EXTERIOR WALL AVB



**Photo #70.01**

○ Application of Henry Air-Bloc All Weather STPE vapor permeable air barrier was observed in progress.



**Photo #70.02**

○ Minimum wet film thickness was spot checked at multiple locations to be between approximately 22 and 28 mils.

# CONSTRUCTION—SPECIAL CONDITIONS





